The Mining Journal

Established 1835 — Railway & Commercial Gazette

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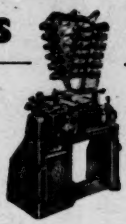

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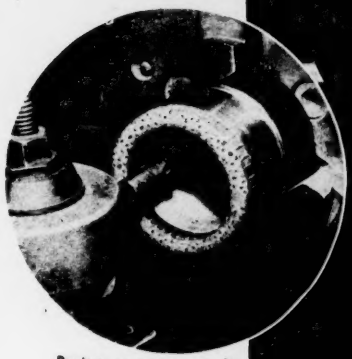

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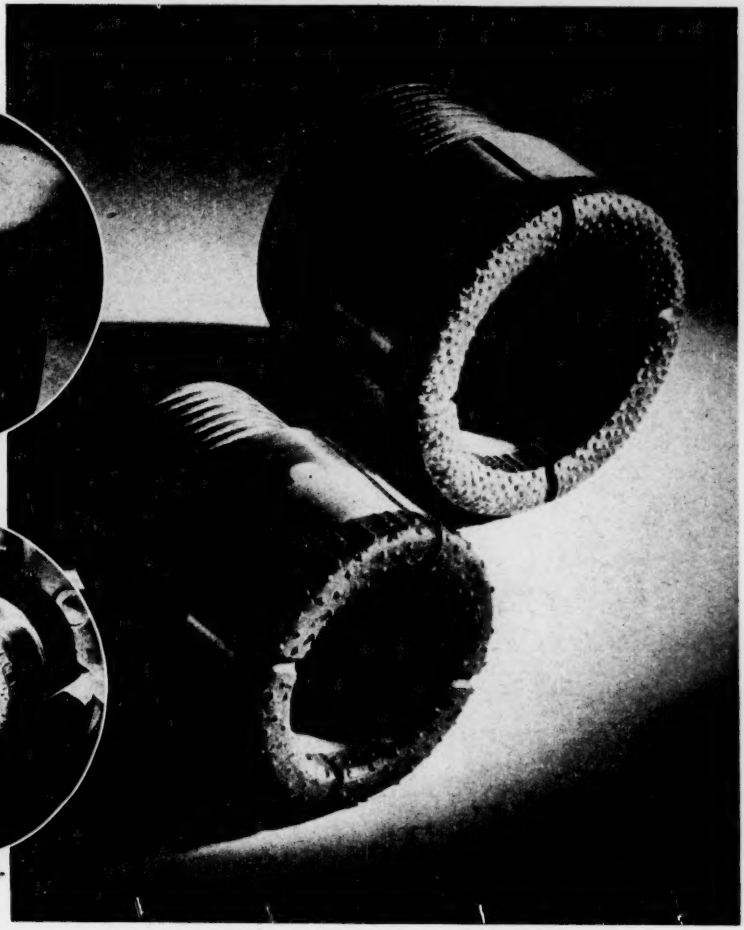

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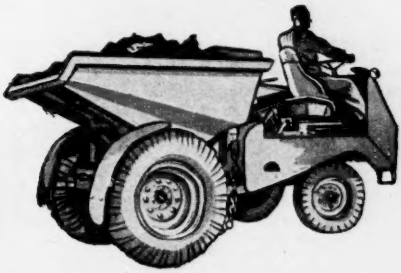

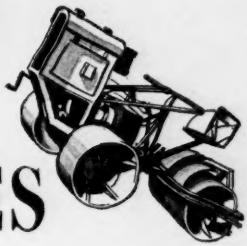

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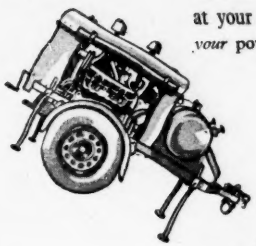

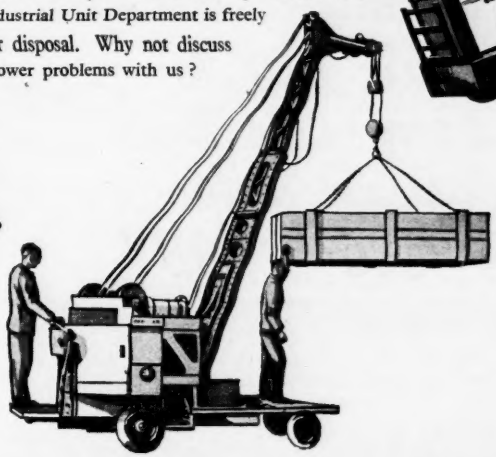

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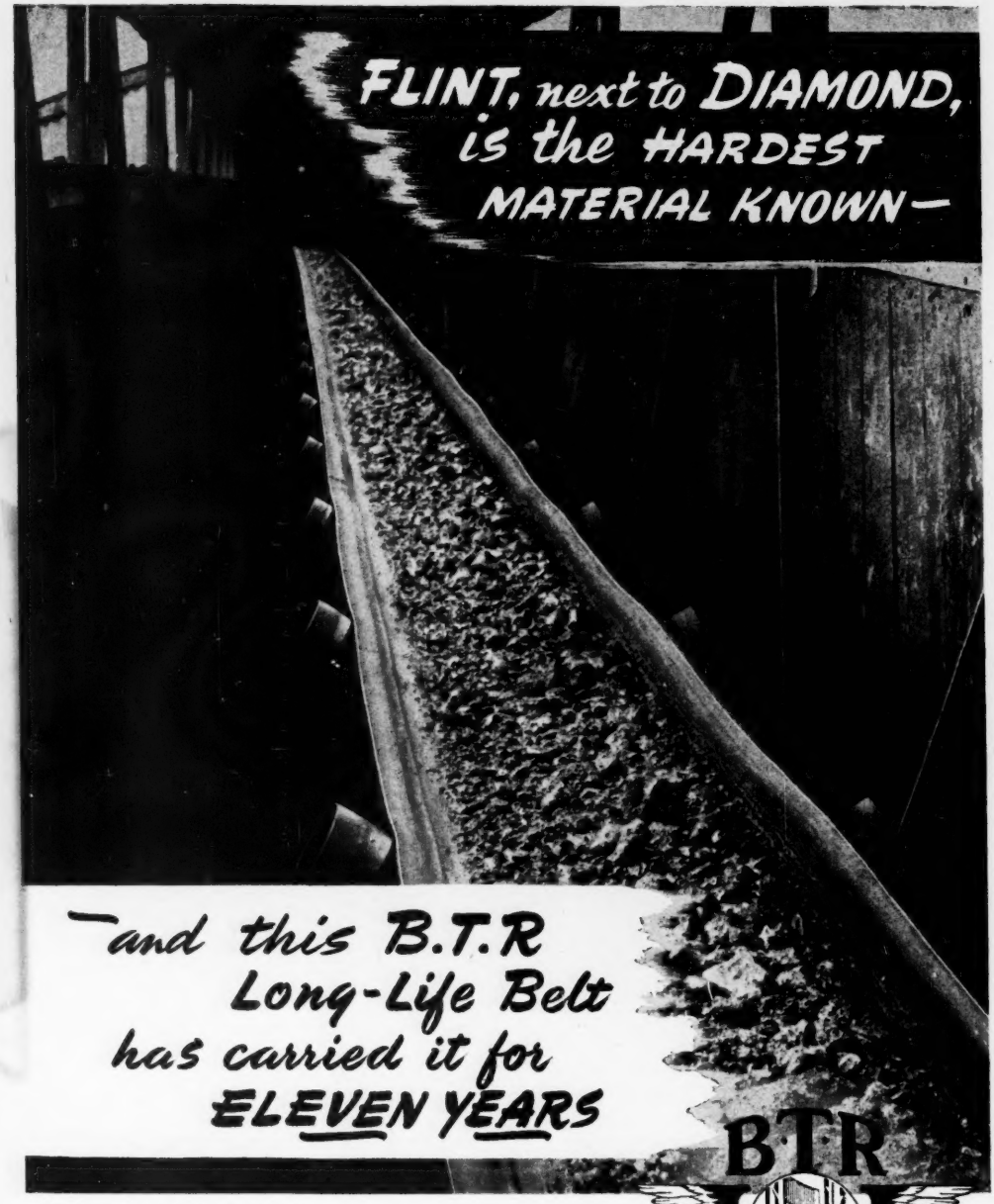

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THIS WEEK'S FEATURES

MAGNESIUM AND MAGNESIA Page 316
MECHANICAL CLEANING OF BITUMINOUS COAL IN THE UNITED STATES - - - - Page 318

NOTES AND COMMENTS

International Tin Negotiations

As briefly announced in our issue last week, the Washington tin talks terminated on March 29 without agreement on the two main points for which they were held, international allocation and fixed prices. It was on these points particularly that the Geneva Conference towards the close of October last broke down, and, as the situation in the meanwhile has not altered in essentials with the exception of the fact that the United States Government has demonstrated its seriousness of purpose by stopping fresh purchases of metal for the national stockpile, the result is scarcely surprising. Unless and until some information is afforded regarding the range of discussions, it is impossible to know whether U.S. purchases under contracts with Bolivia, Belgium and the Dutch interests have been affected by the suspension or termination of stockpile purchases.

Officially it is sought to represent the stage reached last week as merely a more or less inevitable check in the progress towards an ultimate agreement. The Washington meeting is officially characterized as the conclusion only of the first stage of the tin talks; the overseas delegates have now to go home to report to their governments. Meanwhile, it is stated authoritatively that the talks are being continued in Washington by permanent representatives of the countries concerned, and that the U.S. Government is studying proposals from the producing nations designed to break the stalemate.

It seems to be believed in New York tin circles, as the upshot of the conversations, that the producing nations would agree to international allocation of their output for a limited period provided that the U.S. would accept a price satisfactory to the producers; undertake to purchase for allocation any residual production surpluses which may arise, and exhibit willingness to co-operate in an international tin agreement which would control production during periods of surplus, as well as allocate metal during periods of shortage. They appear to insist particularly that before accepting any real sacrifice in the matter of price reduction, under conditions making for high prices, they should be protected against falls in price. In short, put broadly, a return to principles on which international tin control was operated previous to the war.

Meanwhile, local sentiment both in the United States and in Malaya, Bolivia and Indonesia, and no doubt in other producing countries, has hardened against concessions. Producers have naturally reacted strongly against what seemed to us the unfortunate tone of the report of Senator Johnson's Preparedness Sub-Committee, alleging that producers were seeking to hold the United States to ransom. Conversely, this report has hardened the mood of Congress on the question, and Congress will, presumably, have to ratify any international agreement on tin production prices. Moreover, the organization through which tin stockpiling purchases and agreements have been conducted —the R.F.C.—is under severe fire in connection with the many scandals revealed by Senator Fulbright's Banking Sub-Committee which, it is thought, may possibly lead to the abolition of this organization which was created by ex-President Hoover in 1931 as a purely emergency agency, and to the continuation of which he himself is now opposed.

Without wishing to suggest that an agreement along the lines now being pursued is impossible, we would venture to suggest that official international tin control never provided a permanent working basis. It disappeared during the war, and, but for the United States Government's addiction to stockpiling, on a basis calculated to secure supplies sufficient for a five years' war, plus the absence of free world market, would probably never need have been revived. The result has been an advance in prices, which they now regret. The governing factor would seem to be whether the United States will be satisfied to let their heavy stockpile, said to be potentially sufficient for seven years' consumption under conditions of strict economy, run down, and, if so, to what extent. If not, they will have to re-enter the market some day, though obviously they can easily wait and let outside panic buying dry up. The issue of supporting prices in order to prevent economic breakdown in the Far East, Bolivia and elsewhere is a different issue, and is too extensive to be discussed here.

British Mining Productivity Team's Impressions of U.S.A.

It was a foregone conclusion that the British team of 16 which, as recorded in these columns on February 16, recently went to the U.S. to study productivity in the bituminous coal industry, would return very favourably impressed with U.S. achievements in mechanization, underground haulage and the promotion of more efficient working methods. The team, which spent six weeks in the U.S., travelling under the auspices of the Economic Co-operation Administration and the Anglo-American

Council of Productivity, visited 12 mines and four factories producing mining equipment and talked with workers and management in the eastern and mid-western parts of the country.

"We can increase our productivity by employing more mechanization in the extracting process," said Mr. Chiverton, the leader of the team, and "I was particularly impressed with the haulage system used in U.S. mines. Cars carrying coal from the facing to the shaft are locomotive cars with a capacity of five tons. This certainly steps up mining operation. Our cars are rope haulage, handled by cables running from the shaft to the facing, with a capacity of only one ton." He added that in American mines, the management and men were continually on the alert to increase efficiency and production. "They get the highest efficiency out of their equipment. If they want a piece of equipment which they think would increase production and efficiency, everybody is out to get it." It was "more a case of pressing buttons," and the mechanical equipment meant less manpower. He saw little manual labour anywhere.

Other impressions of this tour (the full report of which will be awaited with keen interest) are the mechanical cleaning of coal, good relations between management and men, the fact that Poles and Italians and other nationalities worked in the U.S. pits and got on well with American labour, and that there were pensions for miners at 60, after 20 years' service. On the other hand, safety practices were not so rigid in the U.S.A., and housing in the mining areas was not so good as in Britain.

Greek Aluminium Project

The Greek Geological Survey has completed studies of the Eleusis bauxite mines and calculated proved ore reserves at approximately 2,000,000 tonnes. Plans for the utilization of Greek bauxite include a project for mechanizing this mine and shipping ore to Germany for manufacture into aluminium with E.C.A. assistance. A report recently published by the S. A. pour l'Industrie de l'Aluminium, a Swiss concern, envisages the establishment of an alumina industry in Greece with a minimum output of 80,000 tonnes annually. Alumina would be exported to other countries at first, but after establishment of the necessary plant, aluminium would be produced in Greece. This would be possible after completion of the hydro-electric projects provided for by the recovery programme. Bauxite deposits are considered adequate to insure the functioning of such an installation for several decades. For an annual output of 80,000 tonnes of alumina, about 165,000 tonnes of bauxite and 120,000 tonnes of lignite would be required. The survey recommends the production of alumina by the Bayer process as being the most suitable for Greek bauxite. Plants would be established at Megalo Pefko, Aighion, and Itea. The cost of production per ton of alumina at Megalo Pefko is estimated at $58.80, at Aighion $62.72, and at Itea $60.91.

Bauxite output in Greece increased from 8,051 tonnes in the first quarter of 1950 to 21,000 tonnes in the second quarter, bringing the total to 29,051 tonnes, valued at $U.S.159,779. Exports of bauxite during the first half of the year totalled 31,201 tonnes, 22,736 of which went to Norway and 8,465 to the U.K. Exports of bauxite for 1949 totalled 40,410 tonnes, valued at $U.S.335,667; the U.K. received 5,000 tonnes, Norway 28,510 tonnes, and Sweden 6,900 tonnes.

Imports of aluminium into Greece during the first half of 1950 amounted to 919 tonnes of which 497 came from Canada, 137 from Belgium, 136 from Germany and the rest from the U.K. and other countries. Imports of thin aluminium sheets totalled 314 tonnes in the first six months of last year.

Latin-American Minerals

(From Our Own Correspondent)

Teresopolis, March 24.

Successive reports from Washington this year betray the growing interest of the United States in Latin-American minerals. Chile possesses 40 per cent of the world reserves of copper; Bolivia, whose tin deposits are equally important, is also the biggest supplier of wolfram; Peru is the principal source of vanadium, and has valuable reserves of zinc and lead; Brazil owns the largest known deposits of zirconium and monazite sands, and has reserves of bauxite of the order of 150,000,000 tonnes; iron ore, 25,000,000, and manganese 61,000,000.

During the war, Latin-America supplied over 50 per cent of United States imports of beryllium, manganese, molybdenum, tin, tungsten and zinc, and 100 per cent of her imports of vanadium and antimony. When hostilities ceased and other sources of supply re-opened, the demand for Latin-American minerals dropped, and in some cases ceased altogether, owing to high production costs and transport difficulties. The countries affected protested against the forced suspension of these newly-created activities, and the American Government and private enterprises are now prepared to assist long-term projects.

INCREASING U.S. PARTICIPATION

The United States Government is assisting Chile to instal an important iron and steel mill at Huachipato, and an agreement with the Bethlehem Steel Corp. ensures ample supplies of iron ore for the plant from the El Romeral mines for twenty years. United States Steel has undertaken large-scale exploitation of the newly-discovered Iron Mountain of Cerro Bolivar, Venezuela, and is investing large sums to facilitate export. Moreover, a national Venezuelan industry is also under consideration. In 1950, Bethlehem Steel began co-operating with a Brazilian company in the exploitation of the manganese deposits, with reserves calculated at 20,000,000 tonnes, in the Amapá Territory. Subject to the requirements of local industries, 500,000 tonnes will be exported annually when production permits. The Export-Import Bank is about to advance $U.S.30,000,000 to develop other manganese reserves, estimated at 33,600,000 tonnes, at Urucum, in Mato Grosso, Brazil. These are worked under concession by a Brazilian company in which United States Steel has acquired 49 per cent of the shares. The ore will be mined at two levels, on the surface and by tunnel, and will be shipped in flat-bottomed lighters over the Paraguay River, through the Argentine port of Rosario. The heavy cost of rail transportation across Brazil precludes exports through Santos or utilization by Sao Paulo industries.

Negotiations are now proceeding for a United States loan to improve and equip the Central of Brazil Railway, in order to increase carrying capacity between the coast and the important mineral zone of the Minas Geraes quadrilateral. The railroad carried approximately 700,000 tonnes of ore in 1950, but only 188,000 were available for export after satisfying local needs, and this amount cannot be increased under existing conditions of track and rolling stock. Shipments of iron ore from Brazil are now made chiefly through the port of Victoria, from the ex-British Itabira mines, and reached 721,765 tonnes in 1950, or 250,000 more than in 1949. The exploiting company, the Companhia Vale do Rio Doce, which has received three loans from the Export-Import Bank of Washington, aims at shipping 1,000,000 tonnes in 1951. Further improvements to railroad, mines and port should raise export capacity to 1,500,000 tonnes by the end of the year. Sintering plant is to be installed at Itabira, in order to make fuller use of fine ores, unsuitable for use in blast furnaces in their natural state.

South Africa

(From Our Own Correspondent)

Johannesburg, April 2

In many respects South Africa has much to be thankful for in this year's Budget. Apart from the effects of indirect taxation, the individual taxpayer is not called upon to dip more deeply into his pocket. It is, of course, always easier to criticise a Budget than to frame one, but Mr. Havenga did seem to do some rather peculiar things with mining taxation, the peculiarity being more apparent because he offered no satisfactory explanation for his action.

MR. HAVENGA'S BUDGET

The point that hurt most people with any interest in mining was that the huge profits netted by the wool farmers escaped any extra imposition, while the mining industry, already heavily taxed, was called upon to give more to the State. It seemed rather unwise to make that differentiation because Mr. Havenga thus laid himself open to the charge—which may be unjust—that the Budget was framed for political rather than national expedience.

But whatever the basic motives, the mines will pay more. The gold mines will revert to the previous formula of $63 - \frac{378}{x}$ against the current formula of $60 - \frac{360}{x}$. As "x" stands for the ratio of profit to recovery, expressed as a percentage, it will be seen that the less profitable mines are again protected, as no tax is payable if the profit to recovery ratio is six per cent or less. That, however, is a principle that has been recognized for some years and thus caused no wild acclamation.

In view of the increase in the price of gold, this imposition might not have seemed unreasonable—provided that other fortuitous profits, notably from wool, had been treated equally. The extra contributions of wool farmers under the existing tax rate (about £5,000,000), however, were deemed sufficient; yet the fact that the gold mines' payments under the existing formula rose from £10,650,000 in the calendar year 1949 to about £20,000,000 in 1950 was neither acknowledged, nor, apparently, regarded as sufficient.

Then, announcing an increase from 4s. to 4s. 6d. in normal tax on companies other than mining companies, and from 4s. to 5s. 6d. on base mineral companies (bringing the two groups on to the same basis since the former group also pays provincial tax), Mr. Havenga proceeded to raise diamond mining taxation with the following remarkable explanation: "Seeing that the tax on gold mining and other companies is to be increased, it is reasonable that the diamond mines should also make a contribution to meeting the expected deficit."

He therefore raised their normal tax from 4s. 6d. to 8s. and abolished the special war-time contribution of 2s. 8d., making a net increase of 10d. in the pound.

Had the diamond mines already been on the same taxation basis as other mining companies, the argument might have been reasonable. But they were not. At the height of the war the diamond mines paid 4s. 6d. normal tax plus a special war contribution of 4s. (i.e., a total of 8s. 6d. in the pound). After the war the equivalent special taxation on other companies was dropped, but for the diamond mines it was reduced only to 2s. 8d. in order to re-coup for the State part of the benefit that the diamond mines had reaped from the peculiar conditions existing during the war. That in itself was fair enough, but it was a tacit understanding that in due course the mines would have made a big enough contribution and would then revert to normal taxation only.

The "abolishment" of the special war contribution in the latest Budget was little more than an empty gesture, for in effect it was consolidated into normal taxation and the grand total was raised by 10d. (previously 4s. 6d. normal tax plus 2s. 8d. special contribution, and now 8s. normal tax). Further, the mines are already subject to a 10 per cent export tax on revenue received from rough diamonds, both gem and industrial.

The increased taxation on the base mineral companies is also a matter for some concern, particularly in the coal industry. Due to the double pricing policy, little profit is made on coal sold in the domestic market and the producers have to rely chiefly upon revenue from exports. The higher taxation must tend to reduce the competitive power of the industry in the export market, which it is trying so hard to develop.

No taxation is popular, however, and if the new taxes had been distributed with a little less apparent discrimination, the Budget would have been generally regarded as sound. As it is, the Budget has again demonstrated the vital part played by the mining industry in South Africa's economy.

ST. HELENA TO CRUSH THIS SUMMER

The announcement by St. Helena that the mine would probably not be ready for the beginning of milling on a substantial scale by the middle of the year, as originally estimated, was not altogether a surprise. It has been known for some time that considerable troubles have been encountered in development due to the intersection of water-bearing fissures and, worse, that some of the fissures also emitted methane gas, resulting in explosions and the loss of life.

This was all freely admitted in the commendably frank annual report, which leaves the impression that at least the company is in a stronger position to start production now that it has probably experienced the worst of its troubles in the development stage. The report adds that the plant should be ready for work early in the second half of this year in the expectation that adequate electric power will be available.

St. Helena, as the pioner in the Free State goldfield, has always had to face obstacles, and even without the added difficulties in development it would not have been surprising if the estimated production date had had to be postponed.

OUTLOOK FOR GOLD "BULLISH"

Mr. R. K. Fraay, whose views on economic matters have earned for him a high reputation in South Africa, has now given a warning of the approach of a severe recession, though he is unable to estimate the time of its arrival. Speaking at the annual meeting of the Unit Securities and Trust Company of South Africa, he said that the scarcity of many raw materials might, in the near future, well lead to temporary partial breakdown of the world's economic system, creating unemployment and industrial disorganization.

Any recession, he said, would be more severe than on most occasions in the past as the Western world had, during the last 40 years, practically exhausted the savings of the past generation.

He advised investors not to shoulder liabilities which could not be liquidated at short notice, and to make sound investments instead of accumulating excessive cash resources, for he saw no reversal in the downward trend in the purchasing value of money in the near future.

He believed that those with accumulated cash resources might not find opportunities to take advantage of the next recession. He thought the long-term trend would remain inflationary, while Government control and high taxation would play a much greater part than in the past.

Then becoming a little more optimistic, Mr. Fraay said that South Africa could once again counts its blessings as the outlook for gold was "bullish."

Magnesium and Magnesia

To ensure that this country's growing defence needs are met the Ministry of Supply will assume responsibility for the supply and distribution of all virgin magnesium as from May 1 next. In this connection, the following article surveying the history and present production position of magnesium and magnesia in the United Kingdom will be of interest. The United Kingdom's magnesium production in 1950 totalled about 5,000 tons or nearly 25 per cent of world production, excluding the U.S.S.R. Present measures to increase British production include the opening of one of the plants, closed after the war, to process magnesia from sea water which is described below together with four processes which have been used in this country for producing magnesium.

In 1808 magnesium was isolated by Sir Humphry Davy, but not till 20 years later was the first magnesium metal produced by Bussy, who succeeded in reducing anhydrous magnesium chloride with potash. The early uses of the metal were based for the most part on the brightness with which magnesium burns in combination with oxygen. The best-known application was in the old flash-lights used by photographers, while during the first world war the metal was used extensively for flares, shells, tracer bullets and incendiary compositions.

The very properties which rendered magnesium suitable for the requirements of photographers held back the development of applications in metallic form. The readiness with which the metal oxidized at temperatures above its melting point, and the risk of explosion with magnesium dust, necessitated special conditions of treatment. By the outbreak of the second world war these technical difficulties had been largely overcome. Because of its lightness, strength and physical and chemical properties, magnesium had become a material of major strategic and industrial importance. By enabling weight to be reduced without sacrificing strength it had opened up new possibilities for aircraft manufacture. The expansion of aircraft production and the development of faster fighters and more powerful bombers made ever-increasing demands on the magnesium industry. New alloys with greatly improved mechanical properties were developed. So rapidly was production expanded that from an estimated total of 30,000 tons for the year March, 1939/40, the world output soared to 240,000 tons in 1943/44.

PIONEER WORK IN GERMANY

In developing magnesium as an engineering metal, Germany had a long lead over both Britain and the United States. Towards the end of the 19th century the Chemische Fabrik Griesheim Elektron began to extract magnesium metal by the electrolysis of partially dehydrated magnesium chloride from liquors obtained as a by-product from potash recovery. After the first world war Germany obtained considerable quantities of magnesium from this source. Owing to shortage of copper and other strategic metals, intensive research into the potentialities of this interesting by-product of the potash industry was undertaken. In 1924 the I. G. Farbenindustrie began to study chlorination of the oxide with carbon and chlorine, and succeeded in establishing the process under which oxide is converted to completely anhydrous magnesium chloride, the electrolyte for the fused salt electrolytic process now used on a very large scale in both Britain and the United States. The Germans also discovered that magnesium alloyed readily and, in solid form could not be ignited with a blow torch. In 1923, Griesheim Elektron succeeded in developing methods of refining molten magnesium with inspissating fluxes and protecting the surface from burning, thus paving the way for future progress. So successful were the German metallurgists that the first aeroplane shot down during the Battle of Britain revealed applications of the metal which astonished Allied experts.

As long ago as 1864 a process for extracting magnesium was operated near Manchester by the Magnesium Metal Corporation, formed for the purpose by Johnson, Matthey & Co. Very little metal was produced, however, and operations were eventually suspended on account of high production costs. Up to 1935 this country was entirely dependent on imported magnesium, most of which came from Germany. Fortunately for the country, commercial firms took the initiative in developing the production of this essential requirement in Great Britain. Notes on four of these developments follow:

FOUR BRITISH MAGNESIUM PROCESSES

1. When the expansion of the Royal Air Force began in 1936, the only plant actually in production was a small factory which had been erected the previous year. The process employed uses carbide of calcium as a reducing agent in vacuo at temperatures between 1,200°C. and 1,600°C. Deadburnt magnesite and carbide are heated in steel retorts in gas-filled furnaces, the magnesium distilling off and condensing within the hood in crystalline form. During the war the capacity of this plant was extended, and the same firm operated a shadow factory on behalf of the Ministry of Aircraft Production. In the six months ended September, 1943, the average cost of magnesium and magnesium alloys produced was 3s. 10d. per lb. in the company's own factory and 4s. 3d. per lb. in the shadow factory.

2. Magnesium Elektron Ltd. was formed in 1935 with the object of operating an electrolytic process, for which patent rights for the British Empire had been purchased from the I. G. Farbenindustrie. In this process magnesia is mixed with suitable reducing and other agents, including magnesium chloride solution. The mix is formed into pellets, which are lightly calcined and are then converted into molten anhydrous magnesium chloride. In the electrically heated chlorinators the temperature of the reaction zone reaches 1,100°C. The bulk of the chlorine consumed originates from the electrolytic cells, the remainder being fresh chlorine which represents the operating losses. The magnesium chloride so produced is the only complete anhydrous product ever manufactured on a commercial scale. While still molten it is fed into cells operating at about 750°C. In addition to the magnesium chloride, each melt contains other chlorides whose presence inhibits the decomposition of magnesium chloride at the cell operating temperature and favourably influences the properties of the electrolyte. The electrolytes are suspended perpendicularly and opposite to one another. The metal collects on the face of the cathode in droplets, which rise to the surface of the electrolyte and are removed at intervals. Current efficiencies of 50 per cent and over can be achieved. In Britain the capacity of the cells is limited to 20,000 amps., with a monthly output of about 5-tons per cell, but in the United States cells have been built and operated at about 50,000 amps. capacity. This process yielded the bulk of the magnesium metal produced during the war in both Britain and the United States.

At Clifton Junction, Magnesium Elektron Ltd. built a plant with an annual output of 1,500 tons of magnesium metal. In 1936 the Air Ministry arranged with the company to expand the annual production to 4,000 tons per annum. The extensions were completed and put into operation by the end of 1937, this joint plant yielding Britain's main supplies of magnesium alloys during the early war years. In the six months ended September 30, 1943, the

cost of magnesium made by the electrolytic process was 1s. 7d. per lb.

3. Magnesium was also produced by a process which a British company acquired from a Frenchman in 1938. On the outbreak of war a pilot plant was operating and the process was still in an experimental stage. Large-scale production was started during the war, the average cost of the magnesium produced in the six months ending September 30, 1943, being 3s. 11d. per lb.

4. A fourth producer operated a process using carbon (in the cheapest anthracite waste) as the reducing agent. This method of reduction produces the magnesium in the form of a dust, which can be handled only in an atmosphere of hydrogen, and has to be re-distilled in order to render it suitable for casting into ingots. The company acquired the British Empire rights in this process from an American corporation in 1936. Development of the process in this country, however, was slow. A new plant was completed in June, 1943, but by the end of the year only negligible quantities of metal had been produced.

THE PRESENT POSITION

Throughout the early war years the production of the metal was expanded as rapidly as new plants and extensions could be brought into operation, the national output from all sources reaching a peak level of 20,000-30,000 tons annually. Meanwhile continual research and development allowed a reduction to be effected in the magnesium content of the incendiary bomb. This factor, together with the great increase of capacity in the United States, led to such a favourable transformation in the supply position that several factories were closed down.

Due to the large stocks left over from the war, the last remaining producer, Magnesium Elektron Ltd., ceased the extraction of new magnesium metal in 1947, its plant being maintained as a war potential.

MAGNESIA

Magnesia is not only the raw material from which magnesium is produced, but is also used extensively as a refractory for steel production and other important applications. Before the war Britain's requirements of magnesia were obtained almost entirely from the calcination of magnesite, which was imported from Austria, Greece, India and Manchuria. The magnesium plants were thus dependent on materials brought from overseas. Subsequently processes were developed in the country for treating sea water with dolomite to recover magnesia in the form of magnesium hydroxide slurry. It thus became possible to produce the metal from locally available materials. Lime can replace dolomite in the treatment of sea water, but the yield of magnesia per unit of sea water is reduced by half.

While considerable publicity has been given to the timely introduction of the sea water process, little has been said about the critical supply position existing when war broke out. To private enterprise belongs the credit for providing the material which enabled the large-scale production of metallic magnesium to be embarked upon before 1939. But for the magnesite made available by the Magnesite Syndicate Ltd., supplies of magnesium for aircraft manufacturers during the first three years of war would have been extremely precarious. Throughout the critical period shipments of Indian magnesite were maintained in sufficient quantity to keep works producing magnesium fully supplied and at an economical figure.

At this company's works in Salem, Southern India, some 3,000 people are engaged in the mining and calcination of magnesite and sales amount to over 40,000 tons a year. A large amount of experimental work was carried out from 1934 onwards in the calcination treatment of magnesite to obtain materials suitable for various industrial requirements, thereby enabling the company to meet the emergency of war and provide the country's essential needs. Though Britain no longer requires magnesite for the extraction of magnesium metal, the company continues to produce large tonnages of natural carbonate of magnesia and magnesium brick, which are exported throughout the world in qualities suitable for all industrial needs.

SEA WATER PROCESS

Magnesia for the electrolytic extraction of the metal must be of the highly reactive caustic type, that for the steel industry and for furnace work generally being dead burnt. Plants for the production of both types of material have been erected. The position at the outbreak of war was that three companies in Britain were operating processes for the production of magnesia. The British Periclase Co. was the first to treat sea water with calcined dolomite, thus substantially increasing the rate of recovery of magnesia, approximately half of which comes from sea water and the other half from dolomite. This company's plant was built with the assistance of the steel industry as an insurance against the loss of imported supplies of magnesite, but was still experiencing "teething" troubles when war broke out. To meet the increased programme for magnesium metal production a contract was placed with the company for a new plant using the same process, to be operated on the Ministry's behalf. This plant is capable of producing 40,000 tons per annum of caustic magnesium. The company's original factory was eventually purchased by the Ministry. Its output is being progressively increased and is expected to amount to some 50,000 tons annually of refractory magnesia, as compared with a production of 28,000 tons in 1948.

Shortly before the war a second company began experiments on a small pilot plant for the extraction of magnesia from sea water by using lime. With the support of the Ministry of Supply a factory was erected in South Wales. This enterprise did not fulfil expectations. The capital cost, which was originally estimated at £300,000, rose finally to about £1,600,000. The cost of production, originally expected to be £5 10s. per ton, amounted to nearly £25 a ton. This plant was eventually closed down.

The third firm operating in 1939 was producing a small quantity of high-grade magnesia for pharmaceutical purposes. With assistance from the Government it erected a second plant, using the Periclase Company's process.

INCREASING BRITISH OUTPUT

To-day, virtually the entire British output of refractory magnesia is derived from the sea water plant at Hartlepool. Owing to the present high costs of fuel it is more economic to extract magnesia from sea water than to calcine ores at temperatures of 1,600-1,700°C. It is therefore considered improbable that production from other sources will be resumed. Magnesia is being produced from sea water in increasing quantities at a cost of from £12 to £13 per ton, whereas imported calcined magnesite would cost about £19-£20 a ton c.i.f. The quality of the product is reported to be satisfactory and is still being improved.

In striking contrast to the position in 1939, Britain's supplies of magnesia would thus appear to be assured, while during the war it was shown that self-sufficiency in the production of magnesium metal could be achieved.

Progress in manufacturing techniques, together with the enormously increased scale of production, have placed magnesium in a very strong position. The development of magnesium-aluminium-zinc-manganese alloys, and more recently of the magnesium-zinc-zirconium and magnesium-zinc-zirconium rare earth alloys, have opened up fresh fields of both commercial and military usage.

The opinion has been expressed that, given a greater concentration of interest and a determination to finance

the research and development needed to reduce to a minimum the cost of extraction from our own natural materials, magnesium alloys can become some of the most important engineering construction materials which Britain has ever had.

Given equal prices for electric power and raw materials, the electrolytic process can be operated as economically in Britain as in the United States. Since all the raw materials needed can be obtained locally, the country's entire requirements of metal magnesium could be supplied from domestic sources. Not only would an adequate supply of locally produced magnesium help to conserve dollar exchange, but it could play an invaluable part in the future development of engineering manufacture.

Recently it was announced that measures to step up output of magnesium and to control supplies, principally to ensure that growing defence needs were met, were being taken by the Ministry of Supply. Among these measures is the re-opening of one of the plants closed after the war, which will process the magnesia obtained from the sea water plant at West Hartlepool.

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Mechanical Cleaning of Bituminous Coal in the United States

By R. L. ANDERSON, Engineer-Economist, U.S. Bureau of Mines

The study of coal cleaning plant was one of the objectives of the British Mining Productivity team which, as reported elsewhere in this issue, has recently returned from a tour of U.S. bituminous coal fields. Since it is well-known that coal cleaning methods in the U.S.A. have reached a high degree of perfection, the following abstract from a paper entitled "Statistical Data on the Mechanical Cleaning of Bituminous Coal in the United States," by R. L. Anderson *(Information Circular* 7591 of the U.S. Bureau of Mines), assumes special significance.

This paper covers the progress of mechanical cleaning of bituminous coal only and does not include the anthracites of eastern Pennsylvania. There are no mechanical cleaning plants at lignite mines. The term "preparation" may mean any one or any combination of the following methods: (1) screening into sizes; (2) cleaning by hand picking or mechanical cleaning; (3) mixing or blending, and (4) dustless treatment. Since mechanical preparation includes screening as well as cleaning, the term mechanical cleaning refers only to cleaning with mechanical devices that effect separation of impurities from the raw coal by reason of differences in specific gravity. These mechanical devices are separated into the following classes: (1) jigs; (2) wet-process concentrating tables; (3) classifiers; (4) launders; (5) dense-medium, and (6) pneumatic methods. Where the words "clean," "cleaned," or "cleaning" are used without qualification they refer to mechanical cleaning devices. Unless otherwise specified, tonnages given represent merchantable coal after removal of impurities. All figures are in net tons of 2,000 lb.

GROWTH OF MECHANICAL CLEANING 1927-49

Mechanical cleaning of bituminous coal in the United States started in about 1875, with plants in western Pennsylvania and Illinois and the U.S. Geological Survey began to record the quantity of washed bituminous coal in 1906. This work was transferred to the Bureau of Mines in 1925. The total bituminous coal washed in 1906 was less than 10,000,000 net tons. In 1927, the first year for which complete figures are available for all types of mechanical cleaning, 28,000,000 net tons of bituminous coal were cleaned in the United States, equal to 5 per cent of the total production. In 1949, this figure amounted to 154,000,000 tons, or 35 per cent of the total production.

Refuse handled at cleaning plants increased from 3,000,000 tons in 1929 to 31,000,000 in 1949. The ratio of refuse to raw coal increased from 9 per cent in 1929 to 17 per cent in 1949. Increased mechanical loading during this period was the major reason for additional refuse. Mechanical loading together with mechanical cleaning often will give a lower overall production cost. Other important factors that tended to increase the percentage of refuse it was necessary to remove from the raw coal were: decreased demand for large lumps; increased demand for stoker sizes; increased practice of "full-seam mining"; depletion of some of the better coals and general demand for cleaner coal.

The number of mechanical cleaning plants increased from 236 in 1928 to 571 in 1949, and the average output per plant increased from 122,000 to 269,000 tons of cleaned coal per year during the same period.

Bituminous coal produced at mines with cleaning plants increased from 66,000,000 tons (12 per cent of the total production) in 1929 to 206,000,000 tons (47 per cent of the total production) in 1949.

The ratio of tons cleaned at mines to total production at mines with cleaning plants increased from 49 per cent in 1929 to 71 per cent in 1949.

MECHANICAL CLEANING EQUIPMENT

The oldest and most common type of coal-cleaning equipment is the jig. The first bituminous-coal washery in the United States was a piston jig built in 1869 near Pittsburgh, Pa., to clean slack. There are three general types of jigs—basket, piston, and Baum. The basket jig (the first to be developed), consists of a sieve that moves upward and downward in a tank of water. The piston jig (the next stage in the development of coal cleaning), consists of a fixed sieve, the water being forced through the coal by a piston. The Baum-type jig (the most recent development and the most popular jig in use to-day), is a fixed-screen jig with a sealed chamber in which the pulsations are given to the water by compressed air. The first Baum-type jigs installed in the United States were Link-Belt Simon-Carves washeries built in 1928 in Indiana and Pennsylvania. Other Baum jigs now commonly used in the United States are the McNally-Norton washer introduced in 1931, and the Jeffrey Baum jig introduced in 1934. During 1949, more than half of the total bituminous coal mechanically cleaned in the United States was cleaned by jigs, and about three-fourths of the tonnage cleaned by jigs was cleaned by Baum jigs.

Wet process coal-washing tables have been in use in the U.S. for some 40 years. A Wilfley concentrating table was installed in New Mexico for coal washing in 1911, and Deister-Overstrom and Plat-O tables were first installed in the same State in 1916-17. Coal-washing tables are mainly advantageous in treating sizes from ¼ in. down to 48 or 65 mesh; however, several recent installations include sizes up to 1¼ in. During 1949, about 6,000,000 tons or 4 per cent of the total bituminous coal cleaned in the United States was cleaned by coal-washing tables.

The general theory of coal-cleaning with the classifiers or upward-current washer is that a particle sinks in an upward current of water if the speed of the current is less than the terminal velocity of fall of the particle in still water, and rises if the speed of the current exceeds the terminal velocity of fall. In commercial practice, particles to be separated are a mass of particles in a relatively small volume of water, therefore hindered settling conditions prevail. A Robinson washer installed in Alabama in 1892 was the first classifier used in the U.S., and the Menzies hydroseparator was first used in 1926. The first Hydrotator used to clean bituminous coal was installed in 1939 at a central Pennsylvania mine, and the first Menzies cone separator went into operation in 1936 to clean 2½ to ¼ in. coal in W. Virginia. Most classifier-type equipment is restricted to cleaning coal from which the fine slack has been removed. In 1949, approximately 17,000,000 tons (11 per cent of the total bituminous coal cleaned in the U.S.) was cleaned by classifiers.

Although the most primitive methods used for concentrating ores were launders or trough washers, they were little used for cleaning coal until the Rheolaveur was developed. The first Rheolaveur used in the U.S. was installed in Colorado in 1925; the Link-Belt trough washer was first used in conjunction with Baum jigs at mines in W. Virginia in 1936, and the first Koppers-Battelle launder was installed in W. Virginia in 1937. Approximately 14,000,000 tons (9 per cent of the total) was cleaned in launders in 1949.

THE DENSE-MEDIUM PROCESS

The dense-medium process uses the familiar float-and-sink procedure on a commercial scale. The Chance process, using a mixture of sand and water, was first installed in Pennsylvania in 1925. The first Belknap-chloride washer was installed in W. Virginia in 1935. A large plant, using magnetite as the medium, was installed at Gary, W. Virginia in 1948. There are several other dense-medium processes in use in the U.S., but the Belknap and Chance are most widely used at present. Generally, the minus ¼ in. slack is removed before the coal is cleaned by dense-medium processes. About 24,000,000 tons or 15 per cent of the total bituminous coal cleaned in the U.S. in 1949 was cleaned by dense-medium processes.

The Fraser air-sand process of coal cleaning was first installed in Pennsylvania in 1930. It employs a dense medium, which is formed by bubbling air through a mass of dry sand. The air fluidizes the sand, the coal floats on the aerated sand mass, and the refuse sinks.

Bituminous coal cleaning by pneumatic methods includes air tables, air flow or air jigs, and air sand. The first commercial pneumatic table used for coal cleaning was installed in New Mexico in 1919 and later became known as the American oscillating table. Four other successful pneumatic coal-cleaning machines have been developed and introduced to the American coal-mining industry, *viz.*: the Peale Davis "Pneumo-Gravity" machine; the Arms "Concentrator," oscillating table; the Heyl and Patterson oscillating table, and the "Stump Air-Flow," pulsating air jig.

American oscillating tables and the Stump Air-Flow are the predominant pneumatic coal cleaners in the U.S. today. Pneumatic methods are generally used for cleaning small sizes of bituminous coal and often are used in conjunction with some type of wet cleaning.

Froth flotation of coal in the U.S. began about 1918 with experiments at the Mellon Institute. Although it is applicable to the cleaning of fine sizes (minus 48 mesh), it may be employed on sizes as coarse as ¼ in. To date, the bituminous coal cleaned by froth flotation in the U.S. has been negligible.

There are several miscellaneous processes of cleaning coal, other than the methods previously described, but they are either in the experimental stage or not commonly used.

MINING METHODS AT MINES WITH CLEANING PLANTS

Rapid progress has been made in mechanical loading of bituminous coal since 1927. The ratio of output of bituminous coal mechanically loaded at both strip and underground mines to total production increased from 7 per cent in 1927 to 75 per cent in 1949. During the same period, the ratio of output of mechanically cleaned coal to total production increased from 5 to 35 per cent. With the rapid growth of strip mining and underground mechanical loading, the necessity for mechanical cleaning became more urgent. Mechanical cleaning paced strip mining from 1933 through 1938 and underground mechanical loading through 1939, but the rapid growth of strip mining, especially the numerous hillside operations, and restrictions on new cleaning plants during World War II reversed the trend. The ratio of production from strip mines with cleaning plants to total strip production decreased from 50 per cent in 1938 to 29 per cent in 1946. Cleaning at underground mines with mechanical loading remained fairly constant throughout the war years (1941-1945); about 50 per cent of the production mechanically loaded was produced at mines with cleaning plants. In 1949 the ratio of production from mines with cleaning plants to the total production at strip mines and underground mines with mechanical loading was about 37 and 64 per cent, respectively.

As regards cleaning by States, Alabama was the only State that cleaned more than half the total production in 1927, while in 1949, six States, Alabama, Illinois, Indiana, Kansas, Missouri, and Washington, mechanically cleaned more than half of their total output. Although there was a large increase in mechanical cleaning from 1927 to 1949, five States (Alabama, Colorado, Michigan, Tennessee, and Washington) cleaned less coal in 1949 than in 1927.

REVIEWS

Diamond Drill Handbook.—*By James D. Cumming. Pp.* 500; *illustrations* 129; *tables* 57. 1951, *Toronto, Ont. J. K. Smit & Sons of Canada Ltd., Toronto.*

This handbook, which covers the various applications of diamond drilling, with particular emphasis on the metal mining field, is one of the most comprehensive and authoritative volumes for the engineer and geologist, the student, mine manager, and investor who wishes to understand the relationship of diamond drilling to exploration and mine development. It contains chapters on the history and uses of the diamond drill, as well as data on the diamond, diamond drill bits and the mechanical details of drilling equipment. The handling of over-burden, diamond drill cores and sludge, and problems connected with cementing, casing and water supply are also dealt with. The very important and growing fields of blast-hole drilling, and drilling for oil and coal are covered, and chapters are also devoted to wedging devices, directional drilling, surveying and the exploration and estimation of ore bodies from diamond drilling results. Of particular value are the chapters on contracting, costs and statistics, computations, data sheets and data on U.S., Canadian, and metric standards for diamond core drill fittings. The book is illustrated with photographs, charts and contains all available tables of standards.

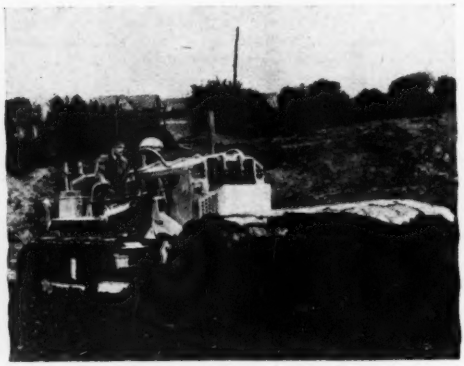
Copies of the *Diamond Drill Handbook* may be obtained from Messrs. J. K. Smit & Sons Ltd., 22-24, Ely Place, London, E.C.1.

Machinery & Equipment

Bray Angledozer Equipment for Challenger Mark III Tractor

Designed in conjunction with tractor manufacturers, the hydraulic Angledozer equipment, manufactured by Messrs. W. E. Bray & Co. Ltd., Feltham, Middlesex, has been developed to give operators an efficient combination of earth-moving equipments at low capital cost; this is being made possible by the incorporation within the tractor design, of various mountings which simplify the manufacture and assembly of the dozing equipment.

Hydraulic control, as designed and manufactured by the company, is powered by a hydraulic pump direct driven from the crank shaft. The oil reservoir, hydraulic control valve, pressure relief and oil filtration systems are incorporated within the front radiator guard assembly, which is in itself a self-contained unit, easily fitted to the tractor. The remote control mechanism, ensuring finger-tip operation, is located in a convenient position for the driver.



Bray Angledozer Equipment for Challenger Tractor

The blade and frame of the equipment incorporate the conventional Bray features, including correctly contoured moldboard to give rollowing action to the spoil, reversible cutting edge, renewable corner shoes, and simple two pin angledozing and cambering.

Leading dimensions are as follows:

Blade length 10 ft. 6 in.
Blade height 3 ft. 3 in.
Blade lift above ground level 3 ft. 6 in.
Blade depth below ground level 12 in.
Angledozing, blade angle from direction of travel 26°.
Camber either hand—length of blade 4¾ in.
Cutting edge 10 in. x ¾ in.
Grading shoes: adjustable with renewable wearing faces.
Jacks (bore and stroke) 6 in. x 14¾ in.
Pump: gear type, front mounted.
Control: valveless.
Weight in lb.: approximately 6,300.

Simplified Klinger "Sleeve-Packed" Cock

A simplified "Sleeve-Packed" cock, of which a brief description is given below, has just been placed on the market by Messrs. Richard Klinger Ltd., Klingerit Works, Sidcup, Kent. The Klinger AB.10 Cock is to replace small taper plug cocks for pressure gauges, air reliefs, drains, instrument connections, compressed air, gas or hydraulic controls and similar equipment. Machined from a hot brass stamping and polished all over, this is a simplified design with a medium of components, based on the well-known Klinger "Sleeve-Packed" principles. It is hydraulically tested to 1,000 p.s.i. (70.3kg/ sq. cm.) and is stated to give reliable service with long life under the most exacting conditions. Offered at prices comparable to ordinary unpacked fittings, it is available in six different patterns with a bore of 5/32 in. (4 m/m), having ¼ in. or ⅜ in. B.S.P. male and ⅜ in. or 7/16 in. whit hex. female screwed connections, with or without union ends.

British Scientific Instruments Exhibition in Paris

It is welcome news that, as a return gesture for the French Scientific Instruments Exhibition held in London in February, 1950, the British Council is organizing an exhibition of British scientific instruments at the Sorbonne between May 11 and 17, 1951, to coincide with the annual French Physical Society Exhibition. The exhibition, which is held at the invitation of the French Government research authorities, and under the auspices of the French Physical Society, will consist of about 40 exhibits, mainly working exhibits designed to illustrate British achievement in the design of scientific research instruments; these are being lent by various industrial organizations and by university and Government laboratories. It will be opened by Professor E. N. da C. Andrade, F.R.S., and a number of other leading British scientists will give lectures during the exhibition.

Readers of the article entitled "The Application of Electronics to Mining and Metallurgy" (see p. 222, *Mining Journal*, Mar. 9, 1951) will be interested to learn that among the industrial exhibits will be the Finch electron diffraction camera for the study of the structure and chemical composition of surfaces, and that other exhibits from industry include a wide range of Geiger counter tubes; a dielectric test set; a counter chronometer for the measurement of short time intervals with the accuracy of a microsecond; an interferometer microscope; a vibrating reed electrometer of high stability and a spectrophotometer designed to measure the reflectance of a sample in several narrow bands of the spectrum. Industrial exhibits include, *inter alia*, Associated Electrical Industries showing their interferometer microscope; Messrs. E. K. Cole's vibrating reed electrometer; Messrs. Evans Electroselenium exhibiting their reflectance spectrophotometer and 20th Century Electronics' Geiger counter tubes. University exhibits from London include an X-ray unit as developed at Birkbeck College with a new kind of electron-optical system associated with micro-diffraction cameras, permitting very short exposure times and from Royal Holloway College, the use of multiple-beam interferometry in the study of oscillating quartz crystals will form an attractive exhibit. Bristol University is providing a photographic exhibit illustrating the use of special photographic plates in the study of cosmic ray events; recent experiments at the Pic-du-Midi on the decay of V-particles, by means of a cloud chamber in conjunction with a strong magnetic field, will be shown on photographs provided by Manchester University.

Among exhibits from research stations of the D.S.I.R., the National Physical Laboratory is exhibiting a demonstration assembly of an electronic digital computor; of the three Ministry of Supply research establishments taking part, the Atomic Energy Research Establishment at Harwell is demonstrating four exhibits including a recently developed machine for the production of quartz fibres of any diameter from 1.5 to 300 microns; four instruments in which quartz fibres are used are displayed, the most interesting being two personal dosemeters—the wrist-watch electroscope and the fountain-pen electroscope. A number of new instrumental techniques developed by the British Iron & Steel Research Association will also be shown.

Metals, Minerals and Alloys

The Ministry of Supply has announced that from Monday last prices of copper, lead and zinc would be increased; electrolytic copper by £8, soft lead by £24 and g.o.b. zinc by £9, these increases being presumably a reflection of the Ministry's own position in relation to supply. The Ministry, moreover, has suspended monthly announcements of allocations in these metals, and in any case, allocations are confined to firms which habitually buy direct from the Ministry, and who, in their turn, may vary allocations according to the importance of the customer's products, and availability of scrap or secondary metal.

Copper.—The current scarcity of copper available to consumers in the U.S. is even more pronounced and "official" sellers have nothing to offer for April delivery; the "official" price remains at 24½c. and is not expected to advance further. Sales for March delivery exceeded 109,000 s.tons with 65,000 s.tons already booked for April. The premium in the scrap market is said to be unsettling the copper trade. The Office of Price Stabilization is believed to have drawn up a price schedule for scrap which is, however, being withheld.

In the U.K. the Ministry of Supply raised the price on Monday £8, to the record figure of £210 per ton. In regard to the Board of Trade orders prohibiting the use of copper and zinc for manufacturing goods for export, the B.O.T. has now stated that exemption licences may be obtained where a conversion factor of at least 15 times can be shown in exports to the dollar area and sterling Commonwealth countries, and 50 per cent elsewhere. Applications for exemption must in all cases be made by the manufacturer.

U.K. stocks at the end of February were reduced to 94,038 tons compared with 101,427 tons at the beginning of the month. Consumption of virgin copper during the month was 26,740 tons, or including recovery from scrap, 45,849 tons.

The U.S. Secretary of State, Mr. Dean Acheson, has repeated that the Government will aid Latin America to increase production of strategic materials, and in this connection it is anticipated that Chile will receive a higher copper price for which a Government subsidy may be provided. Shipments from Chile in February are reported to have been curtailed to 20,824 tonnes owing to the Antofagasta Port strike. Output for the month was 32,399 tonnes.

Fresh trouble is reported from the copperbelt, where practically all the African mineworkers at Nchanga went on strike at the week-end. The strike arose out of the dismissal of a clerk who was treasurer of the local branch of the African Trade Union, and though a conciliator was appointed on March 23, arbitration was refused: the possibility of the strike extending cannot be dismissed.

The Prime Minister of Israel has said that an early start is to be made on copper mining in the state, but no details as to location or character of the deposits have been received.

Japanese rolled copper exports in February were 7,010 tonnes, the best since the war. Exports of electrolytic were valued at $268,000 and of other copper at $651,000.

Lead.—Lead appears to be the metal internationally in shortest supply to-day. While U.S. domestic consumers would be glad to pay the 18½c. charged by most importers, if they could obtain additional supplies, the market is sold out to the end of April, and May allocations are likely to be even tighter. Domestic production in January was 35,722 s.tons, slightly below December's 36,175 s.tons. Offering of Mexican lead are very tight with the last available quotation 19/21c. per lb. nom. In the U.K. the Ministry of Supply's price is now £160 per ton, an advance on the previous record of £24. It is officially stated that the supply position has become more difficult, for which shipping problems are said to be responsible. No change has been made in the basic allocation to consumers, whose quota is 90 per cent of the average monthly consumption. To this figure there are to be no exceptions. Quotas undelivered at the end of each month will be frozen until supplies makes honouring of the contracts possible. Imported primary lead purchases will be restricted to one month forward.

U.K. supplies showed a serious decline in February when they fell from 45,311 tons at the end of the month, compared with 54,591 tons at the beginning. Consumption for the month was 31,666 tons, of which 22,569 tons was new metal.

Tin.—With the breakdown of the tin talks in Washington, the interests concerned have been seeking to digest what lessons may be learned from the outcome. At the tin talks it is reported that the U.S. offered a floor price of 70c. and a ceiling of 110c., while, perhaps somewhat surprisingly, the producing nations are said to have agreed on a price which they regarded as reasonable, but what this was is not reported. Clearly the establishment of a working agreement between the various interests, if achieved, cannot become operative for a considerable period, if only because Congress, in the last resort will, presumably have to ratify it, and in its present temper, will certainly be critical. United States policy has not been clarified by a statement from an R.F.C. spokesman that the Agency was not basing its price on the market quotation from Singapore, followed as it almost immediately was, by progressive rises in their quotation to approximately the Straits price. The R.F.C. supplies and sales are mainly, if not entirely, the product of the Texas smelter, derived from concentrates from Bolivia, Indonesia and the Congo, and anxiety about supplies may supply the reason. At any rate, their quotation which stood at 134c. for some little time past, had risen to 150.5c. on Wednesday. Eastern prices, followed by London, advanced sharply on the results of the tin talks being known.

The Malayan Government collected $S.52,000,000 from export duty on tin last year and $S.15,700,000 in January and February of this year.

Zinc.—The position of this metal in the U.S. is said to be very tight, with holders of Defence Orders unable to secure the supplies they need, and even greater stringency is expected when May delivery books are opened. While the "official" quotation is still 17½c., the validity of these "official" figures as a real test of values is being increasingly discounted. One European government is credited with purchases of Mexican zinc for second and third quarter delivery and beyond at 27½c. f.a.s. Gulf. Prime Western for export was quoted last week at 27.50c. nom. The Ministry of Supply has raised the price of g.o.b. metal by £9 per ton to the new record figure of £160.

U.K. stocks declined in February from 36,186 tons at the beginning to 32,556 tons at the end of the month. Total consumption for the month was 24,770 tons, of which 15,119 tons was primary metal.

Aluminium.—U.S. production in February, though well above the figures for six years previously, was below the 67,954 s.tons produced in January at 62,740 s.tons, but the daily output was slightly higher. The ban on the use of aluminium for a large number of products for civilian use has been postponed for a month, but manu-

facturers are still limited to 65 per cent of the basic figure.

In Yugoslavia the old bauxite mine at Maslinica, closed for 20 years, has been re-opened and production is expected shortly.

Antimony.—The Ministry of Supply raised the price of antimony by £30 per ton yesterday, making the price of English 99 per cent £390 per ton and 70 per cent crude £305. Consumption here continues to increase and in February was at a record rate of 637 tons metal and 460 tons from scrap.

Molybdenum. — The U.S. National Production Authority has issued an order limiting the molybdenum content of stainless steels to 2½ per cent, affecting particularly the chemical industry, oil refining and textiles. Climax Molybdenum reports a net income last year of $12,925,478, an increase of some 25 per cent on 1949. The President attributed the increase in earnings directly to the national defence effort. Prices were raised 9c. per lb. of contained molybdenum last October, and a further 10c. a lb. in December. Norwegian exports of molybdenite last year were only 50 kilos as compared with 88,479 kilos in the previous year.

Sulphur.—The Board of Trade have authorized increases in the maximum price of sulphuric acid of 26s. 6d. per ton in the case of weak and 33s. 9d. per ton for strong acid.

Tungsten.—The tone of the wolfram market is somewhat firmer this week, with buyers' ideas from 530s. to 540s. per unit c.i.f., though sellers want some 10s. more. Possibly for a sizeable parcel for prompt shipment sellers' ideas might be met, but only small parcels are on offer. The U.S. Government is reported to be considering the placing of a ceiling price of $65 per s.ton unit on domestic and foreign ore. Various other proposals have been discussed, including a Government undertaking to purchase all material not disposed of at this price for $63 per unit. It is reported that pressure is being put on the authorities in Portugal to ship to the United States rather than to Europe, but as $65 (duty free) is about equivalent to 520s., producers prefer the higher prices obtainable in Europe. The resumption of Portuguese exports to the U.K. will follow as soon as shipping is available.

Gold.—Production of gold in Western Australia in February was 51,149 f.oz. Semi-processed and processed gold was exported from South Africa in February to a value of £5,424,279, which compares with £1,342,728 a year ago.

The London Metal Market

(From Our Metal Exchange Correspondent)

The rapid price fluctuation which has taken place during the last few days has been entirely due to the actions of the American authorities in twice raising their price at the end of last week when the Singapore market was rising. This gave the impression that the R.F.C. might be altering their selling policy to keep their prices in line with that ruling in the East, but this theory was proved incorrect when the American price was not adjusted on Monday, and at the same time it became known that it was the intention to hold the price at $1.50½ per lb. There has been no indication yet as to the price at which the R.F.C. will buy tin, but it is known that offers at $1.49½ per lb. have been refused. It is still the opinion of a number of operators on the London Metal Exchange that the price at which the Americans will buy tin must form the basis of the world price, and that this price cannot be too low as the R.F.C. bulk-buying contracts are all based, in some measure, on the New York quotation, and the Bolovians, especially, would be extremely disturbed if they could not get a good dollar price for their tin in view of the high prices they are having to pay for their imports from the States. Whether the present level is satisfactory to the majority of parties involved is still a debatable point.

The technical position of the market has been eased by the smaller backwardation and the rise in the stocks in official warehouses.

On Thursday, the official close on the tin market was: Settlement Price £1,255, Cash Buyers £1,250, Sellers £1,260; Three Months' Buyers £1,205, Sellers £,1,210. In the afternoon the market was firmer. Turnover for the day was 105 tons. Approximate turnover for the week was 800 tons.

The Eastern price on Thursday morning was equivalent to £1,213 10s. per ton c.i.f. Europe.

Iron and Steel

It is not expected that the March figures of iron and steel production will register any more than a slight decline. But the position is now rapidly deteriorating. At a time when demand is swollen by the increasing pressure of re-armament requirements, producers find themselves crippled by raw material shortages. Having already made serious inroads upon their stockpiles, most of the works are now operating on something like a hand-to-mouth basis, and the prospect of an early improvement is distinctly unfavourable.

Possibly the loss of at least a 1,000,000 tons of ore would not have proved so serious an embarrassment had scrap been plentiful. Unfortunately, there has been a severe cut in the supplies of German iron and steel scrap available for export, and a further reduction is foreshadowed. It is estimated that for the remainder of the year shipments from Germany to U.K. ports will not exceed 30,000 tons a month, whereas our scrap imports last year reached a total of nearly 2,000,000 tons.

In trade circles this week, the belief was widely expressed that the inevitable consequence of these untoward developments will be the re-imposition of some form of controlled distribution. It is known that the Minister of Supply is reluctant to take this step, but at least some system of priorities may be necessary to ensure the steady development of the re-armament programme and the regulation of the export trade.

Consumers are also apprehensive of a further general rise in iron and steel prices. Iron and steel makers costs have been swollen by the phenomenal rise in freight rates on imported ore, and the wage advance recently conceded to iron and steel workers. Still more oppressive would be the threatened rise of 10 per cent in freight rates demanded by the British Transport Commission. It is certain that any such advance would involve another rise in steel prices.

Tinplate.—In the tinplate industry operating conditions show little change, apart from the application of the restrictions on the supplies of steel bars and sheets. In January the average weekly output of tinplate, black plate and terne sheets in South Wales and Monmouthshire was 510 tons less than in January, 1950, but in February an improvement of 90 tons weekly over a year ago was reported.

Coal

The heavy decline in production during the Easter holidays has altered very considerably the significance of the cumulative output figure to date in relation to that for the corresponding period of 1950, but particularly to the target of an extra 3,000,000 tons in the four months ended April. The rate of expansion between February and mid-March exceeded the customary "bull" pre-Christmas volume, and by the end of the 11 weeks to March 17, the saleable deep-mined and opencast total had been carried to 46,806,400 tons compared with 44,949,600 tons at the corresponding date in 1950, leaving the industry with six weeks, including the holidays, in which to achieve the objective of over 72,000,000 tons by April 30.

APRIL 5 PRICES

COPPER

Electrolytic	£210 0 0 d/d
Fire refined, high conductivity	£210 0 0 d/d
Fire refined, high grade	£209 10 0 d/d
Fire refined, ordinary quality + 99.7%	£209 0 0 d/d
Fire refined, ordinary quality + 99.2%	£208 10 0 d/d

TIN

(See Metal Notes above for Thursday's Metal Exchange prices)

LEAD

Soft foreign, duty paid	£160 0 0 d/d
Soft empire, including secondary lead	£160 0 0 d/d
English lead	£161 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid	£160 0 0 d/d
G.O.B. spelter, domestic	£160 0 0 d/d
Prime Western	£160 0 0 d/d
Electrolytic and refined zinc	£164 0 0 d/d
Zinc (99.99% Zn)	£166 0 0 d/d
Sheets	£176 0 0 ex works
Zinc oxide (red seal)	£178 0 0 d/d
Zinc oxide (green seal)	£179 0 0 d/d
Zinc oxide (white seal)	£180 10 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£390 per ton
Crude, (70%)	£305 per ton

NICKEL

99.5% (home trade)	£406 per ton

OTHER METALS

Aluminium, £124 per ton.	Palladium (scrap), £8 oz.
Bismuth, 22s. 6d. lb.	Platinum, £27/£33 5s. nom.
Cadmium, 17s. 3d./18s. lb.	Rhodium, £45 oz.
Chromium, 5s. 3d. lb.	Ruthenium, £30 oz.
Cobalt, 15s. 6d. lb.	Quicksilver, £73 10s./£74 ex-warehouse.
Gold, 248s. f.oz.	
Iridium, £65 oz. nom.	Selenium, 25s. nom. per lb.
Magnesium, 1s. 6d. - 2s. lb. according to quantity.	Silver (bar), 78¼d. f.oz. spot and forward.
Osmiridium, £35 oz. nom.	Tellurium, 19s. lb.
Osmium, £70 oz. nom.	
Palladium, £8 10s. oz.	

ORES, ALLOYS, ETC.

Bismuth	60% 13s. per lb. c.i.f. 50% 12s.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£11 per ton c.i.f.
„ „ (concentrates)	£11 per ton c.i.f.
„ „ Refractory	£10 12s. per ton c.i.f.
Baluchistan Metallurgical	£11 11s. per ton c.i.f.
Magnesite, ground calcined	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Manganese, Best Indian	(Nominal)
Molybdenite (85% basis)	(Nominal)
Wolfram (65%), U.K.	530s./540s. c.i.f. buyers
Tungsten Metal Powder (for steel manufacture)	35s. 9d. nom. per lb. (home)
Ferro-tungsten	33s. 9d. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 18s. 9d. per ton
Ferro-manganese, home	£34 2s. 4d. per ton
Ferro-manganese, export	Nom.
Brass Wire	2s. 4½d.
Brass Tubes, solid drawn	1s. 10½d.

Mining Men and Matters

Mr. W. Blair has been appointed London office manager of *Johannesburg Consolidated Investment* and has relinquished his appointment as secretary of the company. **Mr. D. L. Reynolds** has been appointed to succeed Mr. Blair as secretary.

The Earl Grey, the ***Earl of Selborne*** and **Lt.-Col. F. B. Follett** have resigned from the Board of Tanganyika Concessions. **Sir Robert J. Hudson** and **Mr. T. P. M. Cochran** have been appointed directors. **Mr. H. V. Gibbs, Lt.-Col. F. B. Follett** and **Col. E. L. Fanshawe** have been appointed alternate directors to **Mr. G. C. Hutchinson, Sir T. E. Robins** and **Dr. A. P. Basto** respectively.

The Committee of the London Metal Exchange, 1950-51.—The following members of the London Metal Exchange have been elected to serve on the Committee for 1950-51: Messrs. F. C. Chisnell, W. K. Davey, W. Stern, H. J. Goodall, W. G. Buchanan, P. G. Smith, L. Guy, O. Becker, T. B. Henderson, W. E. Lucas, D. S. Woodbridge, R. de Poix, F. F. Wolff, G. F. A. Burgess, V. S. Booth.

Entores, Ltd., have announced that as from April 2, their new address will be Kings House, 36 & 37, King Street, London, E.C.2. Telephone: Monarch 3415.

An International Electronics Exhibition will be held in Bombay in February. A Broadcasting Convention of Asian countries will also be held in Bombay during the exhibition.

Cyprus Mineral Exports—January.—Official figures of exports for January were considerably below those of earlier months, as is apt to happen in the winter. The following were the figures: iron pyrites, 42,429 tons; cupreous pyrites, 4,490 tons; asbestos, 687 tons; chromite, 2,000 tons; umber (calcined), 322 tons; ditto raw, 118 tons; gypsum, 150 tons.

Canadian Gold Production, 1950.—Canada's gold production amounted to 4,448,396 f.oz. in 1950, an increase of eight per cent over the preceding year's total of 4,123,518 f.oz. This was the highest annual output since 1942, when 4,841,306 f.oz. were produced.

Malayan Mine Output in 1950.—The chief inspector of mines in Malaya gives the total output for the mines in the Federation as: tin 57,537 tons, gold 18,436 f.oz., wolfram 5.35 tons, scheelite 10 tons, ilmenite (exports) 24,915 tons, columbite 8 tons, iron ore 498,903 tons, coal 415,777 tons, China clay 1,435 tons.

Northern Rhodesia's Mineral Output in 1950.—Northern Rhodesia produced the following minerals in 1950 (figures for 1949 in parenthesis): Cobalt alloy 1,746 tons (1,356), copper (blister) 198,760 tons (194,668), copper (concentrates) 289 tons (323), copper (electrolytic) 76,804 tons (64,413), lead 13,685 tons (13,945), manganese ore 1,723 tons (3,975), tin concentrates 5.40 tons (9.52), zinc 22,715 tons (22,850), limestone 107,160 tons (106,824), silica rock 165 tons (1,203), mica (sheet) 2.20 tons (3.34).

Swaziland Mineral Production in 1950.—According to statistics published by the Geological Survey Department, mineral production in Swaziland developed as follows in 1950 (figures for 1949 in parenthesis): Asbestos 32,666.9 s.tons (33,966.8), valued £1,662,741 (£1,223,486); gold 1,793.55 f.oz. (2,840.61), valued £22,182 (£25,443); silver 60.46 f.oz. (120.00), valued £22 (£15); metallic tin 42.00 s.tons (35.30), valued £25,884 (£17,528); barytes 486.51 s.tons (114.26), valued £3,106 (£637). Total value of the Protectorate's mineral production totalled last year £1,713,928, an increase of £446,812 over 1949, due, in the main, to the higher price of asbestos.

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The Mining Markets

(By Our Stock Exchange Correspondent)

The news of the unexpectedly large overall revenue surplus of £247,000,000 for the year brought about a sudden improvement in the gilt-edged market; it caught the market short of stock and prices rose sharply as bear positions were hurriedly closed. Later in the week, the *Economic Survey*, with its harsh reminders of present day facts, tended to dampen somewhat the enthusiasm of the optimists, and Wednesday, the first day of dealing for the "Budget" account, saw fresh falls in this section. The Budget surplus alone is of course not now a reliable guide to the state of the nation's finances.

Coppers earlier in the week continued firm on the increase in selling price by the Ministry of Supply from £202 to £210 per ton, but fell away on Wednesday. In spite of the fact that those mines registered in Rhodesia appear to form an admirable Budget "hedge," the news of a strike of 5,500 African workers on the Nchanga property upset the market. The strike was caused by the dismissal of an African clerk. The union has declared that unless the clerk is immediately reinstated, Africans on the other mines will come out as well. It is believed that Nchanga can continue smelter production for a limited period with the aid of its 700 European employees, but it is not known how long this could be kept up. Readers will recall that this column suggested some time ago that successful strike action by the recently formed native union might well prove to be the thin edge of the wedge.

Kaffirs have been a firm market, although there has been no rush of business. The attractions of South African shares as a Budget "hedge" coupled with reports that premium gold sales by the Union Government amounted to nearly 50 per cent of production, brought in selective buying both in London and Johannesburg. The price of gold in the free markets of the world has recently started to rise again. If this trend continues, the effect on South African mines could be considerable. West Driefontein were again popular, and rose sharply on further consideration of the results announced last week. Doornfontein, however, showed a substantial fall of 3s. a share. There have been persistent rumours of fresh dyke trouble in the Annan shaft. The quarterly report is expected shortly.

The tone of the West African market was still quiet, but prices generally finished the week fractionally better. Some quarters consider that the Gold Coast will now begin to settle down under its new Government, but the average investor is still chary of committing himself and will certainly require some tangible evidence of this before taking action.

After an uncertain start, Eastern tin shares finished the week in better shape. Gopeng Consolidated announced a fifth interim dividend of 7½ per cent, making a total of 42 per cent for the year ending September 30. No further distribution is contemplated. Last year 30 per cent was paid, and the current yield works out at a fraction over 14 per cent.

Lead/zinc shares were a good feature on the increased price of the metals. Buyers were particularly interested in Mount Isa and Lake George.

In the oil market Shells hardened on steady investment buying. The company has the advantage of having its interests spread throughout the world, and is not committed to one particular area. Investors interested in tanker shares also pushed up the price of Canadian Eagle. There was little turnover in Anglo-Iranian. A large number of the company's employees are now on strike, but city circles believe that the majority have come out more from fear of reprisals by agitators than from any sympathy with their views.

FINANCE	Price April 4	+ or − on week
African & European	3⅜	
Anglo American Corpn.	8½	
Anglo-French	23/9	+7½d
Anglo Transvaal Consol.	41/3	
Camp Bird	14/3xD	−1½d
Central Mining (£1 shrs.)	5/3	+1/3
Consolidated Goldfields	2⅛	+⅛
Consol. Mines Selection	34/4½	−7½d
East Rand Consols	4/-	
General Mining	6⅜	+⅛
H.E. Prop.	38/9	
Henderson's Transvaal	10/-	
Johnnies	3½	+⅛
Rand Mines	7⅛	
Rand Selection	40/-	
Union Corporation	11⅜	
Vereeniging Estates	5⅛	
Wits.	36/10½	+7½d
West Wits.	2⅛	+¼
RAND GOLD		
Blyvoors	54/3	
Brakpan	22/-	
City Deep	3⅛	+⅛
Consol. Main Reef	2⅛	+⅛
Crown	5⅛	−⅛
Daggas	3½	
Dominion Reefs	2/1½	
Doornfontein	25/9	−3/-
Durban Deep	4⅛	+⅛
E. Daggas	26/10½	−7½d
E. Geduld (4/- units)	2⅜	+⅛
E. Rand Props.	41⅛	+⅛
Geduld	8	+¼
Grootvlei	43/9	+7½d
Libanon	18/-	
Luipaards Vlei	25/-	+6d
Marievale	23/3	+6d
Modderfontein B	6/1½	+1½d
Modderfontein East	2⅜	
New Kleinfontein	35/7½	+7½d
New Pioneer	23/6	+2/10½
Randfontein	21/3	
Robinson Deep	43/1½	+7½d
Simmer & Jack	7/6	−3d
Springs	12/7½	+4½d
Sub Nigel	3⅜	
Van Dyk	18/3	−1/1½
Venterspost	33/1½	
Vlakfontein	21/6	
Vogelstruisbult	26/9	
West Driefontein	6⅜	+⅛
W. Rand Consolidated	47/6	+1/3
Western Reefs	41/10½	+7½d

O.F.S.	Price April 4	+ or − on week
Alpha F.S.A.	13/9	+1/-
Blinkpoort	27/6	−1/3
Central Mining F.S.	5/6	−1½d
Freddies	17/6	
Freddies N.	12/7½	+1/-
Freddies S.	13/1½	+6d
F.S. Geduld	4⅛	−⅛
Geoffries	17/3	
Harmony	25/-	+6d
Lydenburg Estates	11/-	
Middle Wits	21/3	
Ofsits	2½	
President Brand	25/-	
President Steyn	17/9	−3d
St. Helena	36/10½	
U.F.S.C. & G.	11/-	+3d
Virginia Deb.	73	−1
Virginia Ord.	14/7½	
Welkom	45/7½	
Western Holdings	3⅛	−⅛
WEST AFRICAN GOLD		
Amalgamated Banket	2/4½	
Ariston	7/6xD	−1½d
Ashanti	28/9xD	−1/3
Bibiani	11/9xD	−3d
Bremang	3/9	
G.C. Main Reef	3/10½	
G.C. Selection Trust	9/9	+4½d
Konongo	2/6	+3d
Kwahu	4/6	
London & African Mng.	2/4½	+1½d
Lyndhurst Deep	1/6	+3d
Marlu	2/3	
Nanwa	1/1½	
Taquah & Abosso	8/-	
AUSTRALIAN GOLD		
Boulder Perseverance	3/10½	
Gold Mines of Kalgoorlie	16/3	+6d
Great Boulder Prop.	7/6	+6d
Great Western Consol.	1/6	
Lake View and Star	22/-	+3d
Mount Morgan	23/6	+1/6
North Kalgurli	19/-	+3d
Paringa	10½d	
Sons of Gwalia	14/6	
South Kalgurli	10/-	
Western Mining	7/-	
Wiluna	11/9	
MISCELLANEOUS GOLD		
Cam and Motor	36/9	−9d
Champion Reef	11/9	−7½d
Falcon Mines	12/-	+6d
Globe & Phoenix	25/3	−3d

MISCELLANEOUS GOLD (contd)	Price April 4	+ or − on week
G.F. Rhodesian	8/7½	−1½d
London & Rhodesian	5/3	
Motapa	3/4½	
Mysore	6/3xD	−1/-
New Guinea	1/9	+1½d
Nundydroog	10/1½xD	−1/1½
Ooregum	4/3xD	−6d
Oroville	12/10½	−1½d
St. John d'El Rey	35/7½	
Zams	34/9	−9d
DIAMONDS		
Anglo American Inv.	3⅜	−⅛
Casts	37/6	
Cons. Diam. of S.W.A.	3⅜	
De Beers Defd. Bearer	58/9xD	−3d
De Beers Pfd. Bearer	17⅛	
COPPER		
Chartered	65/-	−9d
Indian Copper	4/10½	+1½d
Messina	5⅞	−⅛
Nchanga	6⅜	−⅛
Rhod. Anglo-American	60/-	−6d
Rhodesian Selection	36/-	−1/3
Rhokana	20½	−¼
Rio Tinto	23	
Roan Antelope	18/3	−7½d
Selection Trust	44/4	−1/6
Tanks	45/6	+6d
Tharsis Sulphur Br.	55/-	+1/3
TIN (Eastern)		
Anglo-Burma	5/-	−1/3
Ayer Hitam	27/3xD	+6d
Bangrin	35/9xD	−6d
Gopeng	15/3	+4½d
Kongkong	12/4xD	−1/-
Ipoh	31/6xD	−1/7½
Kamunting	11/4½	−4½d
Kepong Dredging	14/1½xD	−6d
Kinta Tin Mines	17/-xD	−9d
Kramat Pulai	4/9	
Malayan Dredging	25/6xD	−1/-
Pahang	17/3	
Pengkalen	10/6	
Petaling	12/10½	−1½d
Rambutan	19/-xD	−9d
Siamese Tin	23/10xD	−10½d
Southern Kinta	14/6	−9d
S. Malayan	30/-xD	−1/6
S. Tronoh	23/9xD	−9d
Sungei Kinta	18/9	−7½d
Tekka Taiping	12/-	
Tronoh	30/-xD	−1/9

TIN (Nigerian and Miscellaneous)	Price April 4	+ or − on week
Amalgamated Tin	11/7½	−4½d
Beralt Tin	23/3	+9d
Bisichi	4/4½	
British Tin Inv.	17/1½	+3d
Ex-Lands Nigeria	7/10½	
Geevor Tin	16/6	+1½d
Gold & Base Metal	4/1½	+3d
Jantar Nigeria	7/9	−1½d
Jos Tin Area	11/6	+1½d
Kaduna Prospectors	4/3xD	−9d
Kaduna Syndicate	6/9xD	−9d
London Tin	5/4½	+1½d
Ribon Valley	1/6xD	
United Tin	2/7½	+1½d
SILVER, LEAD, ZINC		
Broken Hill South	56/6	+1/-
Burma Corporation	4/3	−1½d
Consol. Zinc	32/9	+3d
Lake George	20/-xD	+3d
Mining Trust	5/3	+3d
Mount Isa	39/9	+2/3
New Broken Hill	29/6	+6d
North Broken Hill	76/6	+1/-
Rhodesian Broken Hill	20/9	−3d
San Francisco Mines	£3/6	+6d
Trepca	3/7½	
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	3⅜	
Associated Manganese	73/-	+1/6
Chinese Engineering	2/3	
C.P. Manganese	58/6	+4/-
Natal Navigation	5⅛	
Wankie	21/7½	+1½d
Witbank Colliery	4⅛	
CANADIAN MINES		
Dome	$31	
Hudson Bay Mining	$110	
International Nickel	$74½	+⅛
Mining Corpn. of Canada	£6⅛	
Noranda	$152	+2
Quemont	£9⅛	
OIL		
Anglo-Iranian	5⅜	
Apex	46/10½	
Attock	25/-	+7½d
Burmah	53/9	
Canadian Eagle Bearer	35/4½	+3d
Mexican Eagle	24/9	+1/1½
Shell	4⅛	+⅛
Trinidad Leasehold	25/6	−3d
T.P.D.	30/9	
Ultramar	35/3	−1/6

Company News & Views

Van Dyk's Mining and Development

Apart from the 1950 milling results, the annual report of Van Dyk Consolidated gives little information beyond that already known regarding the No. 5 sub-vertical shaft. It is the sinking of this shaft and developments therefrom which now form the focus of interest.

The mine is in the unusual position of being both a producer and developer; it belongs to the Union Corporation group and is bounded on the east by the Brakpan Mines and on the west by East Rand Proprietary. The northern section of the property has been developed, but has not fulfilled expectations although profitably worked, and has provided sufficient revenue for dividends. In 1946, however, it was decided to suspend distributions and earmark profits for capital expenditure on the opening up and development of the virgin south-west part of the property where the new No. 5 sub-vertical shaft has been sunk. It reached its final depth of 4,698 ft. or 8,139 ft. below surface in April of last year. Station work on the 48th and 50th levels is proceeding and the former was advanced 492 ft., of which 350 ft. was on reef, averaging 4.3 dwt. over 8 in.

The development footage accomplished during the year amounted altogether to 42,891 ft., of which 28,650 ft. were sampled, the pay percentage being slightly higher than in the previous year at 24. There is a drop of 200,000 tons in ore reserves, which now stand at 1,800,000 tons of 3.6 dwt.

During the year the mill dealt with a slightly lower tonnage—1,197,000—the yield being 3.0 dwt. Revenue per ton was up 4s. 3d., but the major benefit of this went to meet the increase of 3s. 9d. in working costs at 32s. 2d. per ton milled; hence, profit per ton was only 6d. higher at 5s. 8d. Working profit totalled £340,264, and after taking into consideration sundry income and expenditure, the net profit figured out at £331,322, which was allocated to expenditure account. Capital expenditure called for £342,227 and, after making other small provisions, the unappropriated balance was £2,615.

Marievale's Record Statement

Further improved results are announced by Marievale Consolidated in its annual report for 1950. A rise of over £407,000 in mining income enabled it to meet heavier taxation while at the same time distributing more by way of dividends. The tonnage milled, helped by the addition of the rod mill to the reduction plant, of 725,500 tons, was the highest yet dealt with and resulted in a record working profit of £984,615. The yield was lower at 5.03 dwt., due to the dropping of the grade, but the revenue per ton increased by 7s. 4d. to 63s. 7d. Unlike many mines of the Rand, which have had to meet higher rates of pay and allowances, Marievale's working costs last year decreased by 4d. per ton to 36s. 5d. The resultant increase of 7s. 8d. in profit per ton milled to 27s. 2d., enabled the very satisfactory higher profit to be made. Taxation called for almost double that of the previous year—£432,101—but after taking into consideration sundry revenue and expenditure, the balance was higher at £544,800 (against £420,760). This enabled shareholders to benefit by way of an increase in dividends to 1s. 10d. per share compared with 1s. 3d.

Substantially larger footages of work were accomplished on both the Main and Kimberley Reefs, the total being increased by 5,485 ft., but the percentage payability on the Main Reef was 15 per cent lower at 43, while on the Kimberley it rose from 12 to 25 per cent. Underground exploration of this horizon continued throughout the year, and a payable zone of approximately 1,600 ft. in length has been located from the 7th level west drive. Work is proceeding to determine the northern and southern limits of the shoot. A fairly large tonnage of ore from the Kimberley Reef was added to the reserves, which have been increased by 200,000 tons and are now at their highest—3,000,000 tons of 5.6 dwt.

Spaarwater's Hopes

Although a rather better showing was made by Spaarwater Gold Mining Co. during 1950, it is evident, from the annual report, that the mine is struggling along. The mill dealt with a larger tonnage last year, though of lower grade ore, and the excess of revenue was the best so far. Mining work was, however, disappointing and ore reserves are again depleted.

The position of the property has invested it with hopes of success as it is bounded on the north-west by the West Vlakfontein, while its eastern neighbour is the rich Sub Nigel. The best values in the mine, judging from the plan of workings, are towards the boundary of this latter. It is probably this fact which has raised the belief that the most economical way of getting payable ore would be via Sub Nigel; hence the possibility of this latter absorbing Spaarwater. Nothing, however, is mooted in the annual report regarding this.

Mining developments during the year were uninspiring; the total footage of work accomplished was more than in the previous 12-month at 20,898 ft., and of the 15,500 ft. sampled, 21.9 per cent proved payable, the average value being 7.4 dwt. The pay percentage in 1949 was over 24 and the average value 8 dwt. Work in connection with the exploration of the mine is progressing, but so far the haulages advanced and the lateral development have not opened up any payable ore.

Reserves are again depleted; there is a further decrease of 77,000 tons, and they are now at their lowest—199,000 tons, value 5.8 dwt., or just sufficient to supply the mill for about a year and a half.

So far as milling is concerned, last year's tonnage of 124,100 was the best so far. It resulted in 30,283 oz. gold being produced of 4.88 dwt. Revenue was £382,397, while mining and milling costs amounted to £247,375, and the excess of revenue was £135,022. An amount of £145,870 was called for development, resulting in a working loss for the year of £10,848, which added to previous debits, makes the accumulated loss to date, £118,648.

Joint Ventures in Burma

After providing for depreciation, the accounts of Burma Corporation for the year ended June 30, 1950, disclosed a trading loss of £506,239, which is the result of the continued closure of the Burma railways for through traffic and the heavy unrequited expenditure on maintenance at Namtu and Bawdwin. Although capital reserves were increased by an *ex gratia* grant of £490,493 from H.M. Government for rehabilitation, this amount bears little relation to the extent of war damage suffered by the Corporation. In fact the Corporation's position as outlined in the statement by Mr. John R. Govett, chairman, accompanying the report was that funds reserved for rehabilitation, including the grant from H.M. Government, have already been expended, and had it not been for the revenue gained from the sale of metals just prior to the closing of the railways, the Corporation's resources would have been exhausted altogether.

If the mine, Mr. Govett continued, is to return to profitable operation, substantial changes in policy and organization will have to be undertaken, but the burden which the company has had to bear as the result of circumstances beyond its control is too heavy for it to continue shouldering alone. Accordingly, it has been negotiating with the Burmese Government during the past year for a satisfactory basis on which the Burmese Government can participate in the industry.

On February 27 last, the Burmese Prime Minister, Mr. Thakin Nu, said that Burma will follow a policy of "joint ventures" between Burmese and foreign interests in her commerce and industry and that negotiations for joint ventures with the Burma Corporation are progressing favourably.

Fanti Consolidated Pays 7½ per cent

The profit and loss account of the Fanti Consolidated Investment Co. for 1950, showed that gross revenue increased by £27,114 to £76,094, an increase due entirely to profit from the sale of investments, which totalled £27,791 against a debit under this heading in 1949 of £35,060. The other main item making up the gross revenue was interest and dividends on investments, which amounted to £45,163, or £678 less than in 1949. Expenses at £7,219 were virtually unchanged and after adding in £20,758 to the net profit of £68,875, the sum of £89,633 (£43,477) was available. Taxation called for £30,844, general reserves received £15,000 (nil), and a dividend distribution of 7½ per cent, which includes a bonus of 1½ per cent absorbed £22,976, leaving the carry forward at £20,813 compared with £20,758 previously.

A list of the company's principal investments is published with the annual report, and the book value of these holdings at the year end amounted to £656,971, but the market value was £182,471 higher at £839,442.

Hilger & Watts Steady Progress

Hilger & Watts, the important scientific instrument makers, during the year ended September 30, 1950, earned a net profit of £35,753 or £4,475 less than for the previous year. This small decline in the company's net earnings was largely accounted for by the interest payable on the £200,000 4½ per cent Debenture stock, 1955/70, which was issued in March of last year to raise the finance necessary for the erection of their new pilot factory at Debden, near Chigwell, Essex. From the £45,747 available, £12,000 was appropriated for future taxation. The Preference dividend absorbed a net amount of £5,156, and a dividend of 7½ per cent (same) on the Ordinary shares absorbed a net amount of £9,281, leaving the carry forward at £19,310.

The major portion of the company's orders are for export, and the United States is now the company's third largest overseas customer.

Mr. G. A. Whipple, chairman, in his statement accompanying the report and accounts, pointed out that while the company was "best known as the makers of high quality optical and mechanical instruments, development in these fields has required a substantial and capable electronic section be constituted in the company's research department." Mr. Whipple has offered to make arrangements for any shareholder to inspect the company's products to be exhibited at the National Instrument Exhibition in July in the National Hall, Olympia, London, an offer which shareholders would be wise to take advantage of.

Company Shorts

Anglo American Corporation's Preliminary Results.—Preliminary figures for Anglo American Corporation for the calendar year 1950 disclose an estimated profit after tax of £2,340,000, as compared with £2,886,000 for 1949. However, the latter figure included the non-recurring item of approximately £1,000,000 arising from the sale of its holding in Springbok Colliery. A final dividend of 20 per cent plus a bonus of 20 per cent, making with the interim dividend a total distribution of 60 per cent, or 6s. per share for 1950. This is at the same rate as for 1949, but the final and bonus distributions are payable on a larger capital as the 567,227 new 10s. Ordinary Shares issued at £6 10s. each in October last now participate.

An amount of £3,050,000 representing share premium less expenses of the new share issue, and issue of loan stock has been placed to General Reserve, which now stands at £12,650,000; dividend warrants will be posted on or about May 17.

Quemont Mining Corporation. — For the year ending December 31, 1950, Quemont Mining Corporation milled 759,633 tons; estimated net profit after provision of depreciation and all taxes, amounted to $4,520,800. The company is exempt from Dominion income tax to December 29, 1952.

New Union Offered Funds.—If authorized by the Court, an extraordinary general meeting of New Union Gold Fields will be held to consider and decide upon certain two offers which have been received by the judicial managers to provide funds for the company and so enable the Judicial Management Order to be lifted.

Torbrit Silver Mines (N.L.).—During 1950, the company crushed 130,290 tons, and estimated net profit after provision for all taxes and depreciation amounted to $561,800. The company is exempt from Dominion income tax to July 31, 1952. At December 31, 1950, the amounts owing to the Mining Corporation of Canada stood at $1,850,000.

Kolar Mines' Accounts Extended. — The four Kolar gold mining companies, Mysore Gold Mining, Ooregum Gold Mining of India, Champion Reef Gold Mines of India and Nundydroog Mines, have announced the extending of their accounting period from twelve to fifteen months, to March 31 next. On April 1 last, the sale of the undertakings and assets was transferred to Mysore rupee companies.

Kalgoorlie Electric Power & Lighting Corp. have announced a fall in the Australian revenue to December 31, 1950, of approximately £10,000. This is attributable to a retrospective payment of £2,400 in 1950 in respect of fuel consumed in 1949 and to increased maintenance and labour costs. The chairman, Mr. W. F. Talbot, is proceeding to Kalgoorlie next week in connection with the new boiler plant extensions and to discuss with the authorities concerned the revision of prices at present charged to consumers.

Anglo Burma's Heinda Mine Closed.—At the annual general meeting of Anglo Burma Tin Ltd., held on December 6 last, the chairman stated that the European staff had returned to the Heinda mine on November 10, 1950, to control and direct operations. Unfortunately the company now reports that there has again been a serious deterioration in conditions in the district and that the mine closed down on March 21 last.

Production for the quarter ended February 28, 1951, amounted to 73 tons of tin ore.

Lake View Acquires Wiluna's Interest in Porphyry.—As from January 1, 1951, Lake View and Star has acquired the one-third interest of the Wiluna Gold Mines in the Porphyry (1939) Gold Mine, and now own a two-third interest in the property. The remaining interest is held by Gold Fields Australian Development, through their wholly owned subsidiary Moonlight Wiluna Gold Mines.

Owing to existing difficulties in obtaining the necessary labour it has been decided, after certain essential work has been completed, to place the Porphyry property on a care and maintenance basis for the time being.

The New Jagersfontein Mining & Exploration Company.—The accounts of New Jagersfontein Mining & Exploration Co. 1950 reveal that the company has paid the 5 per cent dividend provided for in the agreement with De Beers Consolidated. However, the directors in their report have announced that while the mine has been worked at a moderate profit since the beginning of 1950, the grade—between 6 and 7 ct. per 100 lodes—is lower than anticipated, and furthermore, prospecting work on the lower levels, although not complete, so far indicates that an improvement in this respect cannot be expected and that the life of the mine may not come up to expectation.

Vaal Reefs Exploration and Mining Co.—The seventh annual report of Vaal Reefs Exploration showed that capital expenditure on shaft sinking and equipment during 1950 totalled £216,949 and it is estimated that an expenditure of £275,000 will be required during the current year. Funds in hand at the year end to meet future expenditure amounted to £607,806.

Work on the company's property during the year continued and No. 3 vertical shaft was sunk a further 2,662 ft. to a depth of 2,925 ft. Cementation had to be resorted to until the shaft entered the Ventersdorp lava at 951 ft. The sub-vertical shaft was sunk 561 ft. to a depth of 654 ft. below the collar of the underground hoist chamber.

Mr. R. B. Haggart, chairman, in his statement said that the No. 3 vertical shaft should be completed during the second quarter of 1951 and that it is expected that development will commence from the sub vertical shaft during the latter part of 1952.

February Mine Returns

Gold

WEST AFRICA

Amalgamated Banket.—54,683 tons yielded 8,692 oz.; profit £37,585.
Ariston.—28,650 tons yielded £107,979; profit £48,177.
Ashanti.—20,000 tons yielded 16,018 oz.; net mines profit £88,108.
Bibiani.—28,500 tons yielded 6,086 oz.; net mines profit £16,244.
Bremang.—756,100 yds. from 4 dredges yielded 3,547 oz.
Gold Coast M.R.—8,225 tons yielded 2,871 oz.; profit £9,308.
Konongo.—3,500 tons yielded 2,451 oz.; profit £9,815.
Marlu.—45,700 tons yielded 4,679 oz.; profit £20,786.
Taquah.—23,500 tons yielded 5,724 oz.; profit £10,663.

INDIA

Champion.—13,870 tons yielded 5,759 oz.
Mysore.—16,080 tons yielded 4,733 oz.
Nundydroog.—16,000 tons yielded 4,304 oz.
Ooregum.—10,279 tons yielded 2,783 oz.

AUSTRALIA

Boulder Pers.—(Jan. 31-Feb. 27). 9,853 tons yielded 2,694 oz.
Central Norseman.—(Jan. 31-Feb. 27). 12,203 tons yielded 3,606 oz.
Central Victoria.—(Jan. 31-Feb. 27). 138,354 cu. yd. yielded 557 oz.
Croesus Prop.—(Jan. 31-Feb. 27). 6,751 tons yielded 1,510 oz.
Golden Horse Shoe.—40,781 tons of tailings yielded 639 oz. gold and 583 oz. silver.
Gold Mines of Kalgoorlie.—(Jan. 31-Feb. 27). 12,277 tons yielded 3,857 oz.
Kalgoorlie Enterprise.—(Jan. 31-Feb. 27). 3,574 tons yielded 1,134 oz.
KalgurlieOre.—(Jan. 31-Feb. 27). 13,653 tons yielded 3,452 oz.
New Coolgardie.—(Jan. 31-Feb. 27). 3,640 tons yielded 1,680 oz.
Sons of Gwalia.—(Jan. 31-Feb. 27). 8,096 tons yielded 1,939 oz.

MISCELLANEOUS

Brit. Guiana Cons.—469,776 cu. yd. dredged yielding 4,163 oz.
Bushtick.—9,100 tons yielded 1,111 oz.; loss £209.
Cam & Motor.—19,500 tons yielded £55,756; profit £24,678.
Clutha.—(Jan. 20-Feb. 16). Dredge worked 386 hours yielding 124 oz.
Frontino.—7,267 tons yielded 3,270 oz.
Motapa.—22,000 tons yielded 2,199 oz.; profit £3,487.
Rezende.—6,000 tons yielded £12,795; profit £1,401.
Rosterman.—2,698 tons ore and 388 tons sorted waste yielded 974 oz.
St. John D'el Rey.—30,800 tons; value of output £217,354.
Thistle-Etna.—4,400 tons yielded 460 oz.
Wanderer Cons.—24,000 tons yielded 1,872 oz.; loss £160.

Tin

MALAYA

Ampat.—67¼ tons conc.
Batu Selangor.—11¼ tons conc.
Berjuntai.—43½ tons conc.
Ipoh.—26¾ tons.
Jelapang.—22¾ tons conc.
Kampong Lanjut.—37 tons conc.
Kamunting.—233½ tons conc.
Kinta Kellas.—10½ tons.
Kinta Tin.—35¾ tons.
Klang River.—12 tons conc.
Kramat Tin.—22 tons conc.
Kuala Kampar.—171 tons conc.
Kuchai.—69¾ tons conc.
Larut.—79½ tons conc.
Lower Perak.—116¼ tons conc.
Malaysiam.—4½ tons.
Rantau.—56¾ tons conc.
Rawang Conc.—49¼ tons conc.
Rawang Tin.—63¼ tons conc.
Southern Kinta.—309 tons conc.
Sungei Kinta.—30¾ tons.
Taiping.—70½ tons conc.
Tambah.—19 tons conc.
Tanjong.—88 tons.
Tongkah Harbour.—83¾ tons conc.

NIGERIA

Amalgamated Tin.—407 tons tin conc. and 24 tons columbite.
Bisichi.—58 tons tin and 12 tons columbite.
Ex-Lands Nigeria.—60 tons conc.
Filani.—3 tons.
Gold & Base Metal Mines.—44 tons conc.
Jantar Nigeria.—22 tons tin and 20 tons columbite.
Jos Tin.—16½ tons conc.
Kaduna Prop.—4 tons.
Kaduna Synd.—22 tons.
Keffi.—16¼ tons conc.
Naraguta Extended.—10¾ tons.
Naraguta Karama.—14 tons.
Naraguta Tin.—16¼ tons tin and 3¾ tons columbite.
Nigerian Cons.—6 tons conc.
Ribon Valley.—5 tons conc.
Rukuba.—1¾ tons.
South Bukeru.—7¼ tons.
Tin Fields of Nigeria.—3¼ tons.
United Tin Areas.—6 tons conc.

MISCELLANEOUS

Beralt Tin.—6 tons tin conc. and 157 tons wolfram conc.
Bangrin Tin.—82 tons.
Geevor.—4,854 tons yielded 70 tons (65 per cent Sn.).
Siamese Tin.—102½ tons.
South Crofty.—1,385 tons yielded 21 tons.

Coal & Miscellaneous Base Metals

Amal. Collieries.—522,790 tons coal.
Apex Mines.—82,652 tons coal.
Broken Hill South.—(Jan. 1-Feb. 10). 19,760 tons ore (assaying 72.7 per cent lead. 51.4 per cent zinc and 41.3 oz. silver), yielded 3,366 tons lead conc. and 3,941 tons zinc conc.
New Broken Hill.—(Feb. 4-March 3). 15,932 tons ore (assaying 8.3 per cent lead, 12.9 per cent zinc and 1.9 oz. silver), yielded 1,675 tons lead conc. and 3,682 tons zinc conc.
North Broken Hill.—(Jan. 1-Feb. 10). 22,116 tons ore (assaying 14.2 per cent lead, 11.3 per cent zinc and 7.3 oz. silver), yielded 4,330 tons lead conc. and 4,196 tons zinc conc.
Rhodesia Broken Hill.—1,740 tons zinc and 1,050 tons lead.
South African Coal Estates.—142,650 tons coal.
Springbok Colliery.—70,245 tons coal.
Vryhe'd Coronation.—43,904 tons coal and 12,039 tons coke.
Wankie Colliery.—163,768 tons coal sales and 8,114 tons coke sales.
Witbank Colliery.—98,303 tons coal.
Zinc Corporation.—(Feb. 4-March 3). 38,768 tons ore (assaying 13.4 per cent lead, 10.9 per cent zinc and 2.8 oz. silver), yielded 6,709 tons lead conc., and 7,318 tons zinc conc.

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA LTD.

(Incorporated in the Union of South Africa)

ORDINARY DIVIDEND No. 29

NOTICE IS HEREBY GIVEN that a final Dividend (No. 29) of 20 per cent, equal to 2s. per share, plus a bonus of 20 per cent, equal to 2s. per share, making a total of 4s. per share, has been declared for the year ended December 31, 1950, payable to shareholders registered in the books of the Corporation at the close of business on April 17, 1951, and to persons presenting Coupon No. 31 from Share Warrants to Bearer. This dividend together with the interim dividend declared on October 30, 1950, makes a total of 6s. per share for the year.

The dividend is declared in the currency of the Union of South Africa and becomes due on April 18, 1951. Warrants will be posted from the Head and London Offices on or about May 17, 1951.

The dividend is payable subject to the usual conditions, which can be inspected at the Head and London Offices of the Corporation.

The Transfer Book and Register of Members will be closed from April 18, 1951, to April 24, 1951, both days inclusive.

Holders of Share Warrants to Bearer are notified that the dividend is payable at Barclays Bank (Dominion, Colonial and Overseas), Circus Place, London Wall, London, E.C.2, or at the Banque de l'Union Parisienne, 6 and 8, Boulevard Haussmann, Paris, on or about May 18, 1951. Coupons must be left four clear days for examination.

The effective rate of Non-Resident Shareholders' Tax is 6.9 per cent.

The estimated profit for the year after providing for taxation is £2,340,000 (previous year £2,886,000, which included approximately £1,000,000 arising from the sale of the Corporation's holding of stock in Springbok Colliery, Ltd.).

An amount of £3,050,000, representing share premiums less expenses of the new Share Issue and Issue of Loan Stock, has been placed to General Reserve, which now stands at £12,650,000.

BY ORDER OF THE BOARD

London Office: W. E. GROVES
11, Old Jewry, E.C.2. London Secretary.
March 30, 1951.

ANGLO-FRENCH EXPLORATION

DIVIDEND OF 7½ PER CENT

The Sixty-first Annual General Meeting of The Anglo-French Exploration Co., Ltd., was held on March 29 in London.

The Chairman, **Mr. F. R. Cottell, A.C.A.,** in the course of his speech, said:

Our investments at December 31, 1950, stand in the books at £929,853 and are valued at £1,085,782. We have widened somewhat the range of our holdings in Orange Free State gold mining companies. Our preponderant interest in the Rand gold mining industry remains in the mines along what is generally known as the West Wits line, and I am hopeful that within the next year or so your company will begin to reap the benefit of its long-term policy of investment in mines in this area. Our other investments include our holdings in Apex (Trinidad) Oilfields, Anglo-Burma Tin Co., Apex Mines and Rooiberg Minerals, and carefully selected holdings in the Northern Rhodesian copper and Malayan tin mines.

The amount available for appropriation is £69,143. We recommend a dividend of 7½ per cent, which requires £30,938. The profit carried forward is £28,945.

WORLD PRICE OF GOLD AND INTERNATIONAL MONETARY FUND POLICY

No change has occurred in the world official price of gold but there is increasing evidence that official policy is out of line with realities. The gold mining industry in South Africa has benefited from sales of gold in the form of fully fabricated and semi-processed articles, but it is now clear that a large part of these sales has found its way into free markets at premium prices over and above the amounts received by the gold mining industry.

It has recently been revealed that on world markets the present turnover of premium gold sales exceeds by 50 per cent the total gold production of South Africa. Moreover, the International Monetary Fund has announced that such sales have recently been increasing at a rate which indicated that at least part found its way into private hoards, and the Fund has issued a directive that consultations should be held with member countries to draw up more effective methods of implementing the Fund's policy on gold sales. However, other gold producing countries are likely to follow South Africa in obtaining similar facilities for selling gold above the official price, and the question arises as to how long the International Monetary Fund can continue to maintain this artificial position when it is clear that the amount of gold now finding its way into free markets is several times greater than that part of South Africa's production which is sold in processed form.

Is it not time that the price of gold, like wheat, wool, cotton, base metals and other commodities, should be allowed to reflect something nearer its real value in the much over-valued currencies of the world? As long as gold is kept at an artificially low price it cannot fulfil its true functions and the currencies of the world will continue to be suspect. As I have indicated on the last two occasions on which I have addressed you, a change in the value of the currencies of all members of the International Monetary Fund is required in order to bring currencies into line with their real value in terms of gold.

It is often stated that a writing-up of the value of gold in terms of currencies is inflationary and on this I would make two comments: firstly, that maintaining a fixed price of $35 per ounce has not prevented substantial world inflation since the end of the war and particularly in the past few months, and secondly, that it is within the power of Governments to ensure that the increased value of their gold holdings does not put more money into circulation. I am in no doubt that events will, in time, force the International Monetary Fund to face the realities of the situation, but in the meanwhile the world will suffer from the restrictions which their policy imposes upon the functions of gold.

APEX (TRINIDAD) OILFIELDS LTD.

The operations of Apex (Trinidad) Oilfields Ltd., again produced satisfactory profits, and for the year to September 30, 1950, that company paid a dividend of 1s. 9d., free of tax, per 5s. unit of stock against 1s. 6d. for the previous year.

ANGLO-BURMA TIN CO., LTD.

Anglo-Burma Tin Co., Ltd., continues to be handicapped by conditions in Burma. That company had reason to believe that there had been an improvement in the situation in that part of Lower Burma where its operations are carried on, but recent events, which resulted in the tragic deaths of the General Manager and of an employee of another British company in the district, indicate that law and order have, unfortunately, not yet been established permanently.

The position of the company is a strong one and there is no reason to expect that the revenue for the current year will not be at least maintained.

The report was adopted.

W. E. SINCLAIR, M.I.M.M.
Consulting Mining Engineer
South & East Africa & Rhodesia
P.O. Box 1182. JOHANNESBURG

INVESTIGATIONS & MANAGEMENT LTD.,
Technical Consultants to
THE NANWA GOLD MINES LTD, SILVERMINES LEAD & ZINC CO., LTD.
and other mining companies, are continually requiring mining staff of all grades. Apply to Secretary, Finsbury House, Blomfield Street, London, E.C.2, giving record of service, references, etc.

CROWN AGENTS FOR THE COLONIES
DRILLERS required by the Government of Nigeria for the Rural Water Supplies, Public Works Department, for one tour of 18 to 24 months in the first instance. Salary, including expatriation pay £800 a year plus temporary increase of £60 a year. Drilling allowance £120 a year. Outfit allowance £60. Free passages for the officer and his wife and assistance towards the cost of children's passages. Liberal leave on full salary. Candidates should be able to smith their own tools and carry out running repairs to Diesel and petrol engines and must have had good experience of water boring in both soft and hard formations particularly with percussion rigs using cable tools.
Apply at once by letter, stating age, full names in block letters and full particulars of qualifications and experience and mentioning this paper to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M.12976.A on both letter and envelope. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

NATIONAL COAL BOARD
Applications are invited for a post of ROOF CONTROL ENGINEER in the Production Department at London Headquarters.
The functions of the post include the investigation and dissemination of technical information on progress made in the field of roof control, the study systems of strata control generally, and all systems of face and roadway support, and the co-ordination of the work previously undertaken by the Roof Control Unit at Sheffield. The duties will include the study of all these problems, not only from the safety aspect, but also from that of economy and efficient mining.
Salary according to qualifications and experience, but not less than £1,500 per annum. The post is superannuable.
Apply in writing, giving full particulars (in chronological order) of age, education, qualifications and experience (with dates) to National Coal Board, Establishments (Personnel), Hobart House, Grosvenor Place, London, S.W.1, marking envelope TT/307. Original testimonials should **not** be forwarded. Closing date May 7, 1951.

DIVIDENDS

African and European Investment 25% Ord. (April 27)
Ariston Gold Final 15%; *i* 7½% (May 11)
Ashanti Goldfields 1s. 6d. (May 24)
Ayer Hitam Tin 9d. *i* (April 17)
Bibiani (1927) 7.2d. (May 24)
Camp Bird 1s. (April 28)
Imperial Smelting Corporation 6½% Cum. Pref.; 3¼% (April 7)
Lake Shore Mines 15c. (April 16)
Malayan Tin Dredging 3d. *i* (April 30)
Patino Mines & Enterprises 75c. (April 12)
Ribon Valley Tinfields 5% *i* (April 10)
Sn. Malayan Tin 1s. *i* (April 27)
Sungei Besi Mines 7-1/5d. *i* (April 19)
Tronoh Mines 5th *i* 1s.; 1st *i* 1s. (April 10)

i interim • Tax free

Time for Eastern trade

Ten-fifteen in England and the London, Manchester and Liverpool offices of The Chartered Bank of India, Australia and China have already opened to the public. At New York the day's work has not yet begun. In the East at Colombo it is tea-time and in Hong Kong business is finished for another day. But wherever business men engaged in the Eastern trade may be, they will find at the nearest branch of The Chartered Bank up-to-the-minute information, skilled assistance and efficient banking services.

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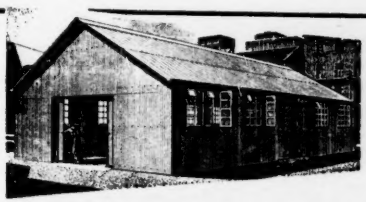

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